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THE GARDEN

AN

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OF

HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED BY WILLIAM ROBINSON, F.L.S.,
AUTHOR OF "ALPINE FLOWERS," &c.

> THIS IS AN ART
> WHICH DOES MEND NATURE: CHANGE IT RATHER: BUT
> THE ART ITSELF IS NATURE.—Shakespeare.

VOL. IX.

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TO THE MEMORY OF

LOUIS VAN HOUTTE,

Nurseryman, of Ghent, Belgium; Founder of the "Flore des Serres"; skilful cultivator and enthusiastic lover of Plants,

THIS NINTH VOLUME OF "THE GARDEN"

IS RESPECTFULLY DEDICATED.

W. R.

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M. LOUIS VAN HOUTTE.

THE late LOUIS VAN HOUTTE was not only a great Nurseryman and the founder of what was considered the most important establishment of its kind in Europe; he was also an enthusiastic lover of plants for their own sake, and a man who in many ways was a benefactor to his Profession. His establishment has long been regarded as the best of its kind, not only in Belgium but also on the Continent, affording, as it did, employment for about 200 persons, and doing business not only in Europe, but also largely in North and South America, China, and Japan. Some idea of the extent of business done here may be gleaned from the fact that about 500,000 plants of Camellias alone were disposed of every year from this nursery. Remarkable among specialities were Palms, and new seedling Azaleas, fine-foliaged and Gesneraceous plants, among which were some fine hybrids. One of M. VAN HOUTTE's earliest attempts at hybridising was crowned with success, the result being the brilliant Gladiolus gandavensis, together with some very beautiful cross-bred seedling Alstrœmerias, of the beauty of which the late DEAN HERBERT spoke most enthusiastically at the time; and, as is well known, many lovely varieties of Azalea mollis have been originated in his establishment. One of his latest successes in this way was the production of Bertolonia Van Houttei, one of the most beautiful of all Melastomads, and an acquisition of which he might well be proud. He energetically followed up the introduction of new plants from the Tropics, and it is interesting to find that one of the most successful of all modern collectors, M. BENEDICTE ROEZL, was brought up in M. VAN HOUTTE's establishment, which was a good school for young gardeners, being remarkable for its completeness in all departments. Not only were plants raised here and sent to all parts of the world by the thousand, not only were catalogues and descriptions of them prepared, printed, and sent out, but one of the most beautiful and useful of all serial horticultural works was edited and the coloured plates prepared under M. VAN HOUTTE's personal supervision. This work has reached its twenty-second volume, and contains 2260 plates, about the same number of woodcuts or lithographic etchings, and about 4500 articles and notes on plants and other horticultural subjects. From the original drawing to the last printing from the stone and final touching up by hand, these beautiful plates were finished in the nursery, a long corridor-like building being fitted up with tables, presses, and other apparatus for the use of artists and printers.

He died on the 9th of May, 1876, aged sixty-six years, and at his funeral the expression of regret at his loss was universal. The Count de Kerchove, Burgomaster of Ghent, said:—"Gentlemen—The Royal Agricultural and Botanical Society of Ghent has just rendered its last homage to one of its most illustrious members, one who has contributed more than any other to the brilliancy of its fetes and the greatness of its reputation; it has said its last farewell to that eminent horticulturist, who, thanks to his energy and scientific attainments, has founded one of the best horticultural establishments in the world. In his youth, LOUIS VAN HOUTTE was an ardent lover of plants, and as a botanist, in more mature years, he made them his constant study. He therefore eagerly accepted an offer which was made to him to go to Brazil as a collector. In this capacity he paid a visit to the vast forests which border the Amazon, and later on to the verdurous solitudes of Eastern Africa. He possessed a constitution which successfully withstood the climatic vicissitudes of the Tropics, where the more important of his botanical treasures were collected. On his return to Belgium he was appointed director of the Botanical Garden at Brussels, where he found himself again among the plants which he loved so well. A botanical garden, however, did not afford him all that he desired; he still longed to dwell among those elegant Palms, those sweet-scented Orchids, and those delicate Ferns with which he had met in his foreign travels, and this at length led to his founding the fine establishment at Ghent with which his name has been so long associated. It is unnecessary to advert to the influence which this nursery has had on the horticultural world. As a man VAN HOUTTE was indefatigable, resolute. Even during his last illness he went to Brussels, in order that he might be an eye-witness of his success at that exhibition. His establishment was ever open to all who took an interest in plants and plant culture, both amateur and professional. No effort seemed too much for him, provided horticulture was benefited by it; and this leads me to direct attention to the beautiful house which he had constructed to shelter the Victoria Regia and his fine collection of Pitcher Plants and Orchids which he so much loved. His loss, as far as horticulture is concerned, is not, therefore, confined to Ghent; but that city, of which he was the first magistrate for many years, will miss him in other respects. Notwithstanding the high position which he attained, and the honours conferred on him, VAN HOUTTE remained a kind-hearted and modest man, his chief pride consisting in gaining the affection of those under him. His disposition was at all times generous, and his friendship sincere. In short, while horticulture continues to engage our attention, his name will live."

THE GARDEN.

VOL. IX.

THE COUNTRY PARSON IN HIS GARDEN.*

By REYNOLDS HOLE.

The Country Parson sometimes refresheth himself, as knowing that Nature will not bear everlasting droopings, that all men shun a perpetual Severity, and that instructions, seasoned with Pleasantness, both enter sooner and root deeper in that ground, which hath been described by the Psalmist as the Ground of the Heart; and so long as he doth remember to put bounds and hoops to his Hilarities, and to

> Pick out of Mirth, like stones from out his soil,
> Profaneness, filthiness, abusiveness,

he doth verify unto himself, and likewise to his friends and neighbours, that proverb of the wise King, which saith, "A merry Heart doeth good, like a Medicine."

Wherefore the Parson, as knowing that he should be unto his people and companions a Teacher and a Guide, striveth to exercise a brave Abstinence and a thoughtful Discreetness, when he chooseth a Recreation, and enjoyeth his ease; keeping himself aloof from evil company, because sins make all equal, whom they find together; and resisting all such excess in the outlay of his Money or his Time, as may prove a robbery and hurt unto his Flock or unto him; all such excitements, as do afterwards unfit men for their duties, leaving them, as do strong Drinks and Dainties, in drowsiness and stupidity; and all such Amusements as have no better purport than to amuse. "If I forget Jerusalem in my Mirth," he saith, "let my right hand forget her cunning." Even in Laughter will my heart be sorrowful; and the end of that Mirth is Heaviness.

And so, albeit the Country Parson hath delight in horses, esteeming them as noblest of all Beasts, and most admiring them outstretched at Speed, and would gladly go forth with his neighbours to witness their Honest contention, yet keepeth he away from the Course or Race, as one who knoweth that lewd fellows of the baser sort, yea the very Abjects, be there gathered together, not to please themselves with the Beauty, the Grace, the Swiftness of the Steed, nor yet with the Skill and Courage of his Rider, but to outwit and to defraud one the other, and to make a jest of Dishonour and Vice. He seeth how that fair Houses be desolate, and ancient Estates be estranged, by the Gambling and Wagering of reckless men, who might have made those Homes Happy, and bequeathed those broad lands to their Heirs; he readeth how that Madness and Suicide have come unto Fools, who have staked all that remained upon a Race, or upon a Throwing of Dice; and in the wail of the widow and in the exceeding bitter cry of the fatherless, robbed of their Heritage, he heareth and heedeth a Voice, that warneth him and all, "Enter not into the path of the Wicked, and go not into the way of evil men."

And though the Country Parson hath learned to ride, in those days, when, as the Latin Poet writes, unbearded Youth in horse and hound rejoices, and though he hath Knowledge, it may be, from a brave Experience, how to clear the strong Wall of Stone, the Fences of Oxen, and the Brook, running broad and deep; and though he honoureth the Chase as an Exercise Brave and Healthful, teaching men to be cool yet bold in danger, and above all as bringing them together, that there be more Friendship and larger Sympathies; though it delighteth him to see the young Squire coming home, with the Brush at his Saddle-Bow; though he leaves the unfinished sentence glistening on his Sermon, or the Lunch half-eaten on his plate, should his ears catch the sounds, or his eyes the signs, of the Hunt; and though his long Clerkly Coat may be seen flying over the Dike and topping the Stake-and-Bound, with half his parish panting in his wake; yet is the Chase (unless his cure be small, and his means large, and he ride not oft, but Valorously), beyond his reach and precinct. It hath a greater disbursement, both of Gold itself, and of the Hours which are yet more golden, than agreeth with the income of a Minister, or with the duties of a Priest.

Next, and as doth concern the Shooting with a Gun, albeit the Country Parson walketh openly and without Shame, if Conscience hinders him not, amid the Stubbles and Turnips of his Glebe, the Coverts of my lord, the Sedges of the Brook; and though the whirring Partridge, the rocketing Pheasant, the gliding Woodcock, the quacking Mallard, the twisting Snipe, and the nimble Coney, escape not his steady aim;—yet, because of jealousies as concerns the Glebe aforesaid, which, for the most part, too small to furnish sport by itself, interferes with the Preserves of others, and because he liketh not the system now in vogue of slaughtering by hundreds poor home-bred birds, so tame that they will hardly rise unto destruction—the Parson goes out but rarely to seek his Recreation with the Gun.

As to Angling with the rod, there be seldom found among Parsons he that takes to this diversion, as good Master Isaac Walton and others, a mighty Affection, one who causeth the Fly to fall so lightly on the stream, and the Minnow to spin so Minnowishly in it, that the wiliest of Fishes look and die. A good fisherman is rare, as a Judicious Hooker among the Clerks, and indeed for that matter among the Laymen too; and, where may be the Desire and Ability, there lacketh oft the Opportunity. Nor must they, who are commanded to be Fishers of Men, go far or frequently in search of it.

The Country Parson has loved Cricket, man and boy, these thirty years or more, and will never lose that Love. He is the Founder and Friend of the village club, and cannot pass his

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* Writ after the manner of George Herbert. Some of the sentences, and everal of the phrases, are from the writings of Herbert

Schoolboys, playing on the Green, without bowling a Ball or hitting it. It stirreth his pulse, and maketh his Heart glad, to run up, when he taketh his holiday, unto the Ground at Lord's, and to see the Boys of his School, or the Youths of his University, or the Men of his County, contend for victory. But he thinketh it unseemly to present himself Publickly in the similitude of a Bale of Flannel, and in the costume of one, who Saweth the Stone; and he loseth moreover early in manhood that Agility of Hand and Speed of Foot, without which he may not Excel. None the less, though he hitteth too late to Leg, and misseth the Catch to Point, and breatheth audibly between the Wickets, his heart is with the Grand old Game; and one of the first duties, which he teacheth his sons and the sons of his parishioners is to Play with a Straight Bat.

In Archery, the Country Parson, whose forefathers fought at Agincourt, and who hath firm faith in Robin o' th' Wood, doth take a pleasant pride, and it is unto him a Wholesome and Cheap exercise of the Muscles, and a welcome Restoration of his mind. But unto few of his Order is given such space of level sward as the Pastime needeth, or that leisure for practising the Art, as he must have, who would succeed therein.

Of all Games that, as it seems to me, suiteth him best, which (though it be very ancient, being identical, or, if not identical, resembling closely the *Sphairistike* of the Greeks) hath but recently been brought to us—to wit, Lawn Tennis. Not so much because it be in name Episcopal, and suggestive to the Parson of the duties, which he oweth to his Ordinary, or of the highest Honours to which his Hope aspires, but because it revives the Racquets of his youth, and without overstraining the locomotive capacities of his Manhood, brings to him, amid cheerful Companions, that glow of Exercise and elevation of Spirit, so refreshing, and so helpful to his bodily Health.

But few Rectors, fewer Vicars, and no Curates, have grounds large enough for a Tennis-Court, or friends at hand to play, if they had.

The Country Parson careth not for Croquet, and though he doth, as a rule, discourage that style of phraseology, which goeth by the name of Slang, and doth condemn all severe and sweeping Denouncements, yet hath he been seen to smile his consent, when his Squire hath pronounced his conviction, that "Croquet was utter Rot."

Seeing, then, that these Diversions do carry with them, so far as we clergy be concerned, both difficulties and Dissuasions, and seeing that at best they are but for the minority, and then only for a Season, we must pursue our inquiry after some other Recreation, which, like the Cup, which cheers but not inebriates, shall Refresh without relaxing the Country Parson.

We shall find it, if I mistake not, in The Garden.

In the Culture of a Garden, as it seemeth to me, the Country Parson hath a Refreshment, pure and pleasant, within his reach always, and within his income also, because Horticulture, if it be discreetly done, tendeth to increase rather than to impair his means of Maintenance; a Refreshment, which, as my lord Bacon saith, is greater than all others else, seeing that it doth renovate Mind and Body alike, without any such Excess or Excitement as doth bring on afterwards a Weariness and Debility. As to other Pastimes, Sports, and Recreations—albeit I do commend them in their temperate uses and their righteous applications—men must go abroad and roam afield in quest of them; and they be given for our Enjoyment at certain Seasons only; and ofttimes they are hindered by unkindly Weather, by Winds, and by Rains, by Droughts, and by Frosts; and their Vexations and Disappointments are not few, as, for example, when he who Hunteth the Fox liketh not a Fence, and goeth a circuit, and seeth the Hounds no more; or when he, who Shooteth Jealously, misseth the Game, and his Rival (as the phrase is) Wipeth his Eye. Whereas I do Affirm, and will humbly endeavour to Attest, that the Country Parson hath in his Garden, not only a Healthful Pursuit and a Happy Pastime, appropriate to his means and to his Vocation, but an Enjoyment, moreover, which, as the Lover said of his Phyllis, "never fails to please." First of all, I would maintain, that there is no Garden so small but that it may constantly supply a Delight and Interest, to those who tend it with Love and care, in the Spring, the Summer, and the Autumn; and that there is no Purse so small, but that, when there is the wish, Economy may afford the little Greenhouse and the Frame, which prolong, through dull Winter, the Gardener's joy. As a rule, the Parish Priest is poor, and when he remembereth the Birthplace at Bethlehem and the Home at Nazareth, he may well learn from his poverty therewith to be content; but it would be hard, indeed, if he could not purchase unto himself that which hundreds of Artizans, by the fair Town of Nottingham and elsewhere, can buy from their wages—"a Bit o' Glass." Assuredly, I say, there is no Garden so small, but that the fair Flowers of the Season may visit it in their course, from the Christmas to the Autumnal Rose; and there is no Greenhouse so small, but that Beauty shall glow therein, if only Affection Watch. "Allers summut to cheer one up, summut bright for th' eye, and m' appen sweet for the nose, indoors or out, summer and winter," said a Mechanic; and surely the Country Parson in the purer air, far away from the smoke of the Town, and having his Plot of ground and his Glass at his door, may achieve a like success, and make his Garden a Joy for ever.

What Treasures he may collect, though his Space be small, what Gems, varied and lustrous, though he doth hold, as it were, the Casket in his hand—yea, Pearls more Blue than the Turquoise, more Purple than the Amythest, more Green than the Emerald, more Golden than the Topez, more Crimson than the Carbuncle, and Whiter than Pearls—he who maketh for himself as, now, Happily for themselves, so many make a Rock, or Alpine, Garden. Just a few large Stones—and I would have him who placeth them betake himself first where he may best observe how Nature maketh her gardens amid the Rocks—and intermixed soils, Dry and Damp, Sand, Loam, and Peat, some for the Sunshine and some for Shade, for he shall have plants Diverse and Multiform; and then, if he will study with his Mind and admire with his Heart, Nurse the Weakly, and Nourish the Strong, Exhume the Groundsel, and Inhume the Slug. Oh, for him, what visions of Loveliness! What an Alphabet is here for the young pupil's eye to learn:—Acæna, Alyssum, Anemone, Arabis, Aubrietia; Bellis and Bluebell; Campanula, Cerastium, Cheiranthus, Cyclamen; Daphne, Dianthus; Erica, Erythronium; Fumaria and Funkia; Gentian and Geranium; Helianthemum and Houseleek; Iberis and Iris; Lithospermum and Lychnis; Menziesia and Myosotis; Nertera and Nierembergia; Orobus and Oxalis; Phlox and Primula; Ramondia and Ranunculus; Saxifraga and Sedum; Thymus and Trillium; Veronica and Viola; and when he has mastered these, what volumes for him to read. As a book-hawker's pack is to the Bodleian, so are all other Libraries to the illustrated Library of Flora.

Next, be it well considered that a Garden hath for the Parson goodly thoughts and Instructions, for it doth Remind him continually how Blessed was the first Gardener, so long as he kept Innocency and obeyed his Maker, and how Briar and Blight, and all that is evil, are the curse and consequence of Sin, and can only be uprooted with Sweat of Brow. If he be sorrowful when he marketh Decay and Death around him, as he who wrote—

> Then went I to a Garden, and did spy
> A Gallant Flower,
> The Crown Imperial. "Sure," said I,
> "Peace at the root must dwell.
> But, when I digg'd, I saw a worm devour
> What shew'd so well;"

he findeth Comfort and Hope with it when he seeth the Resurrection of the Spring and thinketh of his own; he remembereth Who bade him, "Consider the Lilies;" and he hath Faith that the same Power and Love, which brought so much Beauty from the mean, dry Bulb, can bring Angels out of the dust of the Grave.

When he tieth out a branch or pruneth it unto the Shape which he deemeth the best, he must be oft reminded of the young "trees of the Lord, full of sap," which it is his Duty to train Heavenward; and how that sharp knife with which he cuts away excess, deformity, and disease, is like the Iron of Repentance in the Sinner's Soul.

And not only in his Meditations, but in his Ministrations also, shall his Garden be the Parson's Friend. He rejoiceth fervently to make an offering of his fairest Flowers to Him,

> Whose Breath perfumes them
> And Whose pencil paints,

upon the Altar, which is to him a Royal Throne—*Solium CHRISTI*, as it was called of old. He taketh them to Brighten the dreary chambers of the sick, and there he maketh them his Text, and persisteth, that though man cometh up and is cut down like a Flower, like a Flower he is not dead but sleepeth, and shall bloom to an Eternal Summer, upon the New Earth, which will be Heaven also.

A PARADISE OF FLOWERS.

WE have already to lament the vulgarisation of so many beautiful places, both here and on the Continent, by hordes of summer tourists, attracted thither either by hygienic repute, or by the enthusiastic descriptions of those who have been fortunate enough to see the land in its primitive loveliness, that it becomes an instinct in those who are not merely content to do this or that tour, and pass on to do some other in like manner, to be discreetly silent and keep their own counsel about new scenes and routes. Were I to become the lucky discoverer of a new station in this island for one of our rapidly disappearing native plants, such as Cypripedium Calceolus or Menziesia cœrulea, no ordinary bribe would induce me to publish the same in THE GARDEN or any other paper; for the result would surely be a flight of hungry botanists, terrible with trowel and tin case, who would swoop down and loot the treasure, as sure as Kales are curly. But it is otherwise when a vast tract rich in flowery wealth, and lying out of the regular tourist route is visited. The resources of an Alpine region are so inexhaustible on account of the inaccessible storehouses of flowers, and the season during which it can be visited is so comparatively short, that the injury done by a whole battalion of botanists, is infinately less than is caused in this country when prizes are offered (as too often they are) at country flower shows for the best bouquet of rare wild flowers. No one who loves them truly can ever forget his first visit to the home of Alpine flowers. It was my fortune this year to visit with a congenial companion one of the richest valleys in the Ober-Engadine, and although the season was well-nigh spent—it was early in September—many flowers were still recognisable and a few in full blossom. The drive from Coire to Ponté over the Albula Pass is very fine. It occupies twelve hours, and as the road is very steep, half the time may be spent on foot, walking up the hills in front of the deligence. On the Swiss side of the pass the most conspicuous flower in the forests at that late season, was the Swallow-wort Gentian (Gentiana asclepiadea), and the Alpine Toadflax (Linaria alpina), with bright purple, scarlet-tipped flowers appeared to grow even brighter than on rock-work at home, where it is not seen as often as it should be. Here and there a stray blossom of Gentiana ciliata, verna, and bavarica, reminded us that June is the month to visit these high regions. Just before reaching Weissenstein, the highest point of the road, 7,000 feet above sea level, we get above the forest, here composed almost entirely of Spruce and Pinus Cembra. A vast treeless waste surrounds the tavern at Weissenstein; we noticed there a dwarf lilac-rayed Aster lighting up the roadside, and sheets of a blue Monk's-hood, probably Aconitum autumnale, were very gay among the granite boulders. The ever present Coltsfoot (Tussilago farfara) straggled along the roadside even at this high level, but did not seem half so irrepressible or at home as in lower regions. We did not finally lose sight of it till we descended the Maloggia Pass into Italy. The modest British Eyebright (Euphrasia) here appeared as a handsome erect and many-branched plant, 6 inches high, bearing plume-like sprays of many-pencilled flowers, much larger than we are accustomed to see exhibited by the same plant in our lowlands. Our destination was Pontresina, which we reached at six p.m., about two hours' ride beyond Ponté. The situation of the village is most striking. It lies 6,000 feet above the sea at the junction of two streams, issuing respectively from the Rosegg and Morteratsch Glaciers, the end of the former being 4 miles, of the latter 6 miles from the village. The vegetation is wonderfully varied and profuse. The forests cease 1,000 feet above the village, and are composed entirely of Larch and Siberian Cedar (so called, or rather mis-called, for it is the Pinus Cembra). A few bushes of Juniper and Cotoneaster are the only noticeable shrubs, but flowers are almost innumerable, and early in the season they must indeed be delightful. The meadows round the village were still rich with Meadow Saffron (Colchicum autumnale), Dianthus (a large pale variety, reminding one of Heddewigii, but with a delicious fragrance of Honeysuckle), Campanulas, and Asters; an orange-coloured Composite, of a very pleasing tint, was also conspicuous. The woods are carpeted thickly with Rhododendron, Pyrola, Linnæa borealis, and Blackberries; and, above the tree level, the rocks are fairly wreathed and encrusted with such plants as Saxifraga pyramidalis, oppositifolia, Rocheliana, &c., Sempervivum arachnoideum and chrysanthum, Epilobium Dodonæi, Primulas of many sorts, Azalea repens, Crowberries, and Campanulas; while the Scottish Heath or Ling maintains a thrifty life to the very verge of eternal snow—not, however, as we are accustomed to see it, clothing whole mountains in soft purples and russets, such as no other plant can give, but in stunted starveling tufts. We had not time to explore the Rosegg valley, but confined ourselves to that of the Morteratsch, the eastern side of which, being less densely wooded, appeared richest in flowers, especially where the débris forms a well-marked line with the vertical limestone face from which it has fallen. The Val del Fain, or Valley of Hay, opens to the eastward at the head of the Morteratsch Valley, near the summit of the Bernina Pass, 7,000 feet above the sea. It is well named Valley of Hay, for never did I see so many square miles under the scythe. The treeless mountain lawns are smooth enough (though not level enough, of course,) for tennis, broken here and there with masses of rock and little thickets of Daphne Cneorum and Alpine Rose. Both of us being Scotchmen, we involuntarily exclaimed, "What magnificent golf-links!" an expression that conveys a good deal of description in a few words to our fellow-countrymen. Through the centre of this elevated valley, closed at the upper end by the bare vertical walls of the Langard Range, and at the lower end by the dazzling snow-fields of the Diavolezza, a mountain torrent, clear as glass (lower down it receives the milky turbidity of the Morteratsch Glacier), has cut its way deep through a bed of primitive limestone. The walls of this gorge or canon are thickly clothed with a truly Alpine vegetation. We secured a quantity of bulbs of Lilies (which, I fear, will for the most part turn out to be pomponium) and other kinds. Gentians, from the large yellow lutea to the dwarf bavarica and verna, were very abundant. The gracefully-tufted seed-vessels of Anemone alpina waved over the short crisp turf, as those of A. Pulsatilla do on the chalk downs of England; and, mingled with these were seed-vessels of a genus, so singularly alike that it was only by looking at the root leaves that they could be distinguished. We obtained also some roots of a pretty hairy Campanula, with drooping bells of pale blue. But our most showy prize was half-a-dozen stout tufts of the much-extolled Edelweiss (Gnaphalium Leontopodium), of which we found a mass on the cliff overhanging the stream. To wear a bit of Edelweiss of your own plucking in your cap is reckoned a sort of certificate of your matriculation in Alpine climbing. It is so much sought after by tourists and natives—by the latter to be sold to the former—that it has disappeared from most accessible places near the villages, so we considered ourselves in luck when we came upon this bed of it. The plants of it which I brought home are spending the winter, not, as heretofore, in a snow wreath, but in a cold frame. To all fellow-lovers of flowers who visit the Engadine I would say go in June, take an air-tight tin case, a geologist's hammer, and a collector's trowel, and you will be amply rewarded. But do not appropriate any of the tempting little seedling Pines in the forests, for there is a wise decree in this canton that for every Pine so stolen detection entails a fine of 50 francs.

SALMONICEPS.

Renovating Unhealthy Camellias.—Last season I set about growing Camellias, my stock of which consisted of two dozen plants. They ranged from 2 to 4 feet in height, and the whole scarcely produced a dozen flowers. The appearance of the plants being anything but promising, I removed the old soil from the back of our late Peach-house 1 foot deep—or perhaps more—put in rubble for drainage, and planted the Camellias close to the back wall with their root soil intact, giving them good holding loam. They have grown well, and I have this season a good crop of flowers.—G. R.

IVY NOT INJURIOUS TO TREES.

Being a devoted admirer of Ivy, allow me to offer the following remarks, which I hope may tend to induce your readers to use their own observation with regard to this beautiful and invaluable climbing plant, and not be led away by the repetition of remarks and assertions which lead to its destruction on ill-founded accusations. Ivy does not extract nourishment from trees. In a young state it is furnished with little soft feelers, by which it is enabled to cling to the bark and grow upwards. As it advances in age, these appliances die away and wholly disappear, and the stem of the Ivy has no more to do with the tree than a rope would have loosely coiled round it. Anyone may then pass their hand between the stem of the Ivy and that of the tree around which it coils, and that it does not injure the growth of trees, excepting when it becomes too heavy for the boughs on which it rests, I can prove from numberless instances; but I will only name two of the most remarkable. More than fifty years ago, Ivy was planted at the foot of an Apple tree, in a flower garden (now in my possession); the Ivy flourished, and made the tree a complete evergreen umbrella, which it is to this day, and yet, notwithstanding neglect as regards pruning, which would have been desirable to lighten the weight of Ivy from the upper boughs, that Apple tree flowered and bore annually, and still flowers and has borne fruit to a comparatively recent period. I do not adduce this instance with any idea of recommending the use of Ivy for increasing the produce of the orchard, but I do so to prove that it cannot impair the vitality of a tree, if an Apple tree can flower and bear for the greater part of a century, having been loaded with Ivy for more than half that period. Another instance is that of a Chichester Elm, also in my grounds, the rapid and fine growth of which elicited the wonder of the late Sir William Hooker. This tree has only been planted between thirty and forty years, and for size, height, and beauty it is the admiration of all who see it. Ivy was planted at its base at an early period, and has grown with its growth; the stems of the Ivy are now as thick as small cables, and between them and the tree, which it adorns with its evergreen foliage, at the present season when its natural leaves have fallen, there is a complete hollow. Ivy is also unrivalled in its wall-drying qualities, and sometimes is the only cure for a damp wall through which rain is driven by wind, a fact of which anyone may convince themselves, by the continual appearance of cobwebs if Ivy is torn down from a wall. The small wall Ivy is a very slow grower, but an admirable preserver of stone walls; it does not go between the stones, but forms a strong network over the face of the whole.

A. Ll.

Church Decoration.—The following is the way in which we decorated a Church in this neighbourhood. The wall behind the altar we panelled and dressed with green Box or Yew, the angles and centre being Golden Holly. On this we fastened bunches of berries, the effect of which, backed up by the yellow leaves, was strikingly beautiful. On the sides of the panels, half way between the corners, we put clusters of yellow-berried Holly, which, on the dark ground, looked well, the position of the different-coloured berries and leaves being reversed in each alternate panel. Elsewhere, the panels were trimmed with silver-leaved Holly, mixed with common small wild Ivy, which was allowed to run gracefully, more or less, into the panels. In this case, no berries were used. Behind the altar was a cross, covered with green Moss, with very small Ivy embedded in it, and dressed with eight fine Eucharis flowers, viz., two at the base, four up the middle, and one on each side, forming a chaste and beautiful centre-piece.—John Garland, *Killerton, Exeter.*

Deranged Thermometers.—The directions for adjusting registering thermometers which may have become out of order, as given at page 276, Vol. VIII., of The Garden, apply only to the horizontal spirit minimum self-registering thermometers; the upright maximum and minimum instruments referred to by "Enquirer" (see p. 537, Vol. VIII.), which are filled partly with alcohol and partly with mercury, are too complicated and of too delicate a nature for any but a skilled workman to set right when once out of adjustment. The reason why one side reads higher than the other is that the thermometer, which is constructed for use only in a vertical position, has been laid down, and the two fluids have thus been displaced. "Enquirer" also complains that the index now follows the fluid instead of remaining in the tube at the maximum or minimum points, or requiring the aid of a magnet to move it in the tube, as originally was the case. This defect arises from the gradual loss of elasticity of the human hair (used as a spring to retain the index in the tube), by exposure to the action of the sun's rays. These thermometers should be placed strictly in the shade, as none but mercurial thermometers will resist the sun's heat without risk of being put of adjustment.—Negretti & Zambra, *Holborn Viaduct.*

NOTES OF THE WEEK.

—— At present, when the water-line of the Serpentine is 3 or 4 feet below the kerb stone placed around it, the folly of placing this stone edging there may be more fully seen than usual. Of course it must come away some day. The right margin here, as in most cases, is sand or gravel.

—— Among choice vegetables now obtainable in Covent Garden Market are fresh green Peas—forced indoors, of course. Asparagus may also be had; Truffles, from Hampshire, are tolerably plentiful; French Lettuces, Endive, Witloof or Chicory, and young Radishes are of excellent quality for salads; and winter Cucumbers may also be had in good condition.

—— There is yet a wide field for raisers of new Apples of first rate quality and which will keep. Now, at the end of the year, specimens of our two best flavoured Apples, Cox's Orange Pippin and the Ribston, are obtained with difficulty, whilst the latest specimens are beginning to decay, and American fruit commands the best prices. Raising large cooking Apples, of which we already have too many, is needless work.

—— Among the most beautiful of all pot-plants now brought to Covent Garden Market is the lovely little Siberian Squill, with drooping flowers of the clearest and most vivid blue colour imaginable. We have previously alluded to the charming potfuls of scarlet Tulips, intermixed with Lily of the Valley and Maiden-hair Fern now to be seen in the market, and we hope to see this Squill used in the same way. Indeed, nothing could well be prettier than pots of Lily of the Valley and tender young Ferns, neatly but not too regularly margined with this beautiful little Alpine bulb.

—— It is proposed to hold, in connection with the Westminster Aquarium, which is to be opened to the public early this month, a series of flower and fruit shows on the following dates—April 12th and 13th, Forced Rhododendrons, Azaleas, &c.; May 10th and 11th, Roses in pots, Azaleas, Palms, and Decorative Table Plants; May 30th and 31st, Grand Exhibition of Plants and Fruit; July 5th and 6th, Great Rose Show and Dinner-table Decorations; and October 4th and 5th, Great Fruit and Chrysanthemum Show. The amount offered in prizes at these exhibitions is £2,500, the prize money to be paid on the first day of the show.

—— We have frequently alluded to the rare Orchids which now find their way to the florists' shops in Covent Garden, and it is with pleasure that we see glimpses of the time when these plants shall be obtainable by anyone who cares to grow them. Cypripedium insigne is now sold as an ordinary decorative plant, and this week we have noticed flowers of the beautiful Pilumna fragrans, one of the purest and sweetest of all white-flowered Orchids, Roezl's, Pescatore's, and the Alexandrian Odontoglots; also the tiger-spotted species (O. grande), Oncidium cheirophorum, O. tigrinum, Lælia anceps, L. autumnalis, and L. furfuracea, to say nothing of a whole host of Lycastes and Dendrobes of the commoner kinds.

—— Mr. James Barnes writes to us, as follows, respecting some trees of the Cloth-of-Gold Rose, in Devonshire:—"Near Mr. Ellacombe's vicarage, at Clyst St. George, lives a small tradesman, a great Rose fancier, who has growing at the end of his house the finest Cloth-of-Gold Rose tree I have ever seen. It covers the whole gable end of his house, has a stem as thick as one's arm, and produces flowers in such abundance as to surprise all who see it when in bloom. The only attention which it receives is pruning out the weak wood and tacking in the long, strong shoots full length. Another Rose tree, of the same variety, close to Exmouth, grows up the side of a house to a height of from 30 to 35 feet, the growth being rough and rambling. This tree makes young wood 10 and 12 feet in length, and when loaded with blossoms, which it annually is, its appearance is strikingly beautiful, intermixed with other climbers.

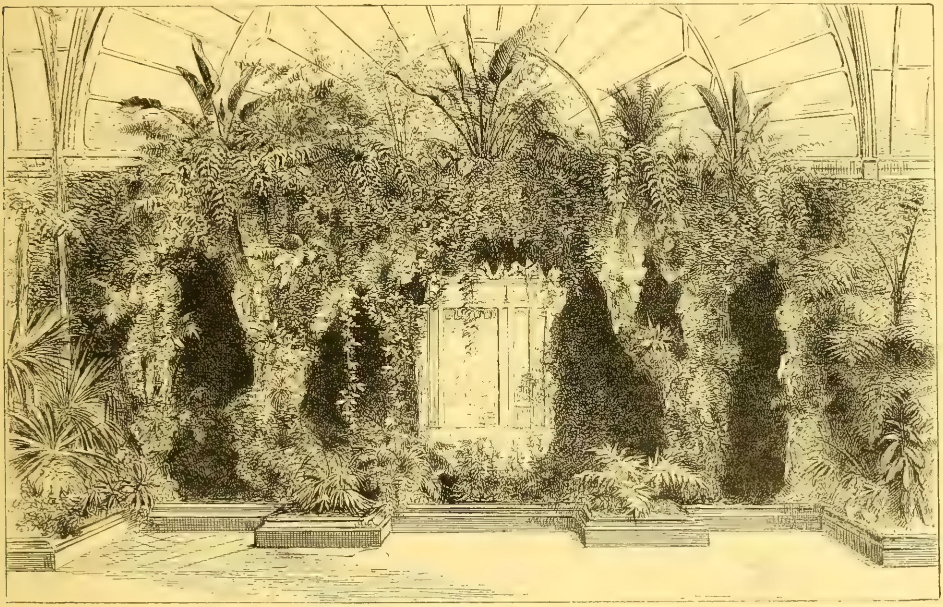
—— A monograph of the genus Adiantum, by A. Keyserling, appears in the "Memoires" of the Academy of St. Petersburg, Vol. XXII., part 2 (1875).

—— In the limited space afforded by our index supplement we, this week, have had little more than room to hint at the great amount of attention that Mr. Darwin has throughout his life given to plants, and to his claims to be included among great gardeners. He has little affinity with the numerous botanists who concern themselves with the names of plants only. He has tried to fathom some of the mysteries of plant life and has often succeeded, and often pointed to the direction from which light will probably come. Many of his most interesting experiments were carried out with living plants in his own garden in Kent, and in his own greenhouse.

THE INDOOR GARDEN.

ROCKY SCREENS IN CONSERVATORIES.

It is often desirable to hide a wall or some other unattractive surface or objectionable feature in a winter garden or conservatory. How to do this effectually and gracefully is often attempted in the garden. Happily, it has often been most effectually done, and we this week engrave a photograph of a rocky screen erected in a conservatory near Hampton Court, by Messrs. Weeks & Co. In this case a view of certain outhouses, &c., necessitated a screen, and a rocky screen erected by Mr. Pulham is, as many of our readers know, a beautiful object, especially when Ferns and Mosses begin to feel at home on it, and free-growing climbers fall from point to point. By leaving interspaces for plenty of soil, fine-leaved plants may be well grown, their massive leaves contrasting admirably with the delicate grace of the Ferns and Mosses. In a conservatory or glazed structure of any kind, where the atmosphere is, to some extent, under control, it is easy to sustain an abundance of graceful plant life on a rocky screen, particularly if it is made after a fashion that allows a good deal of soil to be placed here and there. But, even without any soil, numbers of plants root freely and live healthfully on tufa, and even on hard rocky surfaces.



Rocky Screen in a Conservatory.

PELARGONIUMS AS BASKET PLANTS IN WINTER.

In lofty conservatories the addition of hanging baskets considerably enhances their attraction. One condition of success in growing basket plants is the careful selection of plants that will really flourish in the strong light and dry atmosphere of such a situation. After trying several experiments, I must give the pre-eminence to the several varieties of Pelargoniums, both for the length of their period of flowering and for the great variety of colour, both in leaf and flower, which they exhibit. About the middle of August last we filled several large baskets with the Pelargonium family. The bottom of each basket was lined with fresh green Moss, and large plants of the Ivy-leaved varieties, such as L'Elégant and Willsii roseum, were planted at the edge, and pegged over the outside of each. The centres were then filled with free-flowering Zonals, scarlet, pink, and white, and a few plants of tricolor and scented-leaved varieties. They were hung up out of doors under the partial shade of trees for a month until well established, when they were removed to their light, airy, winter quarters at the top of a large conservatory; since then they have been continually glowing with splendid trusses of bloom. The many beautiful varieties of Ivy-leaved Pelargoniums now in cultivation show to greater advantage in this way than under almost any other circumstances. As soon as the under part of the basket is covered the shoots should be allowed to depend naturally, when their graceful habit will greatly add to the beauty of their showy, but stiff-habited, Zonal brethren. The good or bad effects of baskets depend greatly on the graceful and natural manner in which the plants are arranged. Great care must be paid to the watering of all basket plants; they are much exposed to drying currents of air, and therefore suffer sooner from lack of moisture than plants on the floor or stages of the house. While speaking of the free-flowering properties of Pelargoniums for winter decoration, allow me to add that most cultivators are very differently situated to your correspondent, Dr. Denny (see page 515, Vol. VIII.), who, like many enthusiastic cultivators of some particular class of plants, thinks his own hobby worthy of more attention than others feel disposed to pay to it. While fully admitting all that your correspondent can urge in favour of the Pelargonium as a winter-blooming plant, I would remark that, in furnishing conservatories at this or any season of the year, one of the things to be avoided is too great a preponderance of any one class of plant. That course is calculated to weaken the effect of a conservatory, and is in fact a repetition of the evils of our summer bedding system.

James Groom.

Henham.

THE FLOWER GARDEN.

THE POLYANTHUS.

In old books on the cultivation of the Carnation and other florists' flowers, published in 1822, I find that in treating of the Polyanthus, a list of no fewer than forty-two named varieties of the fine old gold-laced type is given; and of this number, as far as I can learn, only one variety was in cultivation thirty-five years later. I got this information through searching published lists of that time. The most complete list that I can lay my hand on gives only thirteen varieties, and of these perhaps not more than half a dozen are now in cultivation. In the south of England, named Polyanthuses are almost unknown, except in a few rare instances, but they can be met with in Lancashire and Yorkshire, though by no means in plenty, even in districts so eminently suited to the successful cultivation of the Polyanthus. At the exhibition of the National Auricula Society at Manchester in April last, it was noticeable that, while Auriculas, both show and Alpine, were produced in large numbers, the former especially, only a very few Polyanthuses appeared in the classes set apart for them, and they came from only two or three exhibitors, and consisted of Sanders's Cheshire Favourite, Cronshaw's Exile, and Bullock's Lord Lincoln. A really good Polyanthus—good in so far as it answers to the requirements of the standard of quality set up by the old florists—is a very beautiful flower. Of the forty-two varieties mentioned by Hogg, what has become of them? I should imagine that a large number of them died out because of the higher quality found in the flowers that succeeded them; but of the varieties that superseded them, how many could now be found? I am doing my very utmost to get a collection, and have already obtained some three or four, found in a list of the best varieties given in 1856. If half-a-dozen or so can be got together, a good groundwork would be formed, out of which to produce some new varieties. The best estimate of properties in a good laced Polyanthus was set forth by the late George Glenny, as follows:—Of the pip. 1. The single pip or flower should be perfectly flat and round, and be slightly scalloped on the edge, and three-quarters of an inch in diameter. 2. It should be divided in six places, forming six apparent flower leaves, each of which should be indented in the centre to make it a kind of heart-shaped end; but the divisions must not reach the yellow eye. 3. The indenture in the centre of the apparent flower-leaves should be exactly the same depth as the indenture formed by the union of these flower-leaves, so that it should not be known by the form of the flower which is the actual divison and which is the indenture—in other words, which is the side and which the centre of the flower-leaf; and all the indenture should be as slight as possible to preserve the character. The tube should be one-fifth of the whole width of the flower, and stand up at the edge above the surface of the yellow eye. 4. The flower should be divided thus: the yellow tube in the centre being measured, the yellow eye around the tube should be the same in width as its diameter; and the ground colour of the flower should be the same. Or draw, with the compasses open to the sixteenth of an inch apart, a circle for the tube or centre; open them to three-sixteenths, and draw another circle for the eye, then open them further to five-sixteenths, and draw a circle for the ground or dark colour. Beyond these circles there is a yellow lacing, which should reach round every flower leaf to the yellow eye, and down the centre of every petal to the eye, and so much like the edging that the flower should appear to have twelve similar petals. The ends of these twelve should be blunt and round like so many semi-circles, so that the outline of the circle should be interrupted as little as possible. 5. The tube should be nearly filled up with the six anthers, which are technically called the thrum, and the flower should not exhibit the pistil. 6. The edging round and down the centre of the leaves formed by the divisions should be of even width all the way, and universally of the same shade of sulphur, lemon, or yellow as the eye, and there must by no means be two shades of yellow in the eye. 7. The ground colour should be just what anybody likes best, but clear, well-defined, perfectly smooth at the edges inside, next the eye, to form a circle; and outside, next the lacing, a black or a crimson ground, being scarce, is desirable; but the quality of the colour as to clearness, rather than the colour itself, constitutes the property. Of the plant—1. The stem should be strong, straight, elastic, and from 4 to 6 inches in length. 2. The foot-stalk of the flowers should be of such length as to bring all the flowers well together. 3. The truss should comprise seven or more flowers, and be neatly arranged to be seen all at once. 4. The foliage should be short, broad, thick, and cover the pot well. To these rules Glenny also added some applying to the exhibition of pairs of plants, or pans of plants, as collections of more than two are termed. The pair, or pan if more, should comprise flowers of different and distinct colours, either the ground colour or the yellow of each being sufficiently different from the rest to be well distinguished. The whole should be so near of a height as to range the heads of bloom well together. The great fault of the Polyanthus now, even among the best sorts, is that the divisions between the petals are so wide as to make the flower look starry, whereas there should be no more gap where the division is than is in the indentation of the petal itself. To many these rules may appear needlessly minute, and even arbitrary; but when they are most displayed in any flower, the beauty of that flower is at once apparent. An ordinary Gold-laced Polyanthus grown in a border has many attractions; but one of the fine varieties, that has been subjected to pot culture, has the beautiful lacing which constitutes the chief beauty of the flowers most charmingly arranged.

History.

How the Gold-laced Polyanthus of the florists originated appears difficult to ascertain. Possibly, by means of some old books, its gradual development might be traced, and the time when it was first taken in hand by the florists discovered. In one of his interesting reminiscences, the late Dr. Horner, of Hull, who was a leading cultivator of the Polyanthus in his day, states that "the Polusanthos, Poly-anthus (many-flowered), is a direct descendant from the Primula vulgaris, the common Primrose; yet what a change have the labours of the florist wrought here!—so great, indeed, that we are compelled to resort to the more exact science of botany to assure us of its undoubted origin. For, not only has cultivation imparted to it a new as well as a distinct arrangement of colours, but the sessile stem of the Primrose has been converted into the scape, or elevated stem, bearing an umbel of flowers, as in the recognised Polyanthus of florists. That the Polyanthus is indeed thus derived, the florist is too often vexatiously reminded, in witnessing among his cherished hopes in a bed of seedlings, a fair sprinkling of Primroses, both plain and coloured; while the cultivated seed of the Primrose will not unfrequently produce coloured flowers, and that on an elevated stem." I have heard of an old florist, a great lover of these flowers, who regarded all except what we call "show Polyanthuses" as Primroses, whether they bloomed on single stems or in an umbel, and he distinguished the former as "single bloomers," and the latter as "cluster bloomers." From whatever it may have sprung, it is certain that succeeding generations of florists have brought into cultivation and largely improved the Gold-laced Polyanthus, and eventually named varieties, a few of which survive to the present day. Of late years named varieties of the Gold-laced Polyanthus have been raised and sent out round London; but a comparison with such fine standard flowers as Cheshire Favourite, Lancer, and Exile, shows how much below these they must rank when tested by the rules which constitute quality.

Cultivation.

The only sure guidance in the artificial cultivation of a plant is the observance of its natural condition and habitat; and where grows the Primrose, in its wild luxuriance, but in the shaded lane or woodland? And, though it is sometimes seen to adorn in the spring the sunny bank of a hedgerow, yet, ere the summer's sun can visit it, even there it will be found that Flora has kindly sheltered her favourite amid the shadowing growth of others of her train. The Polyanthus, then, should always be grown in a cool bed or open border, which has an eastern aspect, or which is otherwise wholly shaded from the summer's sun, for it is most impatient of heat and draught, and, it may be added, of confinement and smoke also; and hence it can never be well grown in the immediate vicinity of large towns. This is Dr. Horner's experience, and it is quite in accordance with that of a great many others who have endeavoured to cultivate this flower. No mode of culture shows off the Polyanthus to better advantage than growing it in pots; at the same time, in order to succeed, it is a process requiring some care and attention. There was much more truth than appears on the surface in the remark of an old florist that "hard well-burnt unporous pots and thorough drainage" are essential to its successful culture, and 48 and 32-sized pots—using them according to the size of the plants—are the best for the purpose. So much for the size of pots for the Polyanthus. In regard to soil good fibry loam from a pasture, the top spit of which should lie by for a year or so till thoroughly decomposed, leaf mould, powdered charcoal, and dung from a spent Cucumber frame, well mixed together, the loam about one-half of the whole, is the best soil in which the Polyanthus can be grown. The usual rule is to pot up the plants for spring blooming about the month of June and July, though some do it as early as May; and when this is done, the plants should be quite shaken out of the soil in which they have been growing, and a good portion of the long stumpy tap root cut away, retaining only that part nearest the leaves that has plenty of young fibres. It should be borne in mind that the young or fresh roots of the Polyanthus are thrown out close to, and even among, the leaves, and, in consequence, when the Polyanthus is planted in suitable soil in the open ground, and allowed to remain undisturbed for any length of time, the tap root gradually becomes of great length. At the time of this early summer potting, offsets are removed from the plants, and the treatment of these shall be dwelt on presently. In the act of potting the cultivator should form the soil in the pot like a cone, and on this the root stem of the plant should rest, with the roots hanging down on all sides; and in this way pot them, putting the plant pretty deeply in the soil, remembering what was just now stated, that the young roots come from about the leaves. Bear in mind that it is always more easy to top-dress a plant, and by so doing bring it nearer the surface of the soil, than to lower a plant that has grown out of the soil. The latter difficulty can only be met by re-potting. After potting, water the plants freely, in order to settle the soil well about the roots. The plants should then be placed in a shady situation, in an old frame with a good ash bottom raised well above the surface of the ground; but at the same time they must have abundance of air. The plants will not need further watering till the roots begin to lay hold of the soil. It is well to protect the plants from heavy rains. In October the surface of the soil should be stirred, and if any green growth has accumulated, as sometimes happens, it should be removed, and replaced with some fresh soil. It is a usual practice to top-dress at this season of the year.

Wintering the Polyanthus.

This should be done in a cold frame, but the frame should be banked up on the outside with ashes, or earth, or leaves, to keep it warm in times of severe frost. The plants should be placed on bricks, inverted flower pots, or wooden frames, and be raised to about a foot from the glass. By thus raising the pots, the air can freely circulate among the plants, which is of great value at this season of the year. Or the pots can be brought into a cold greenhouse, but placed on a raised shelf. Green fly is apt to affect the plants during the winter, and they should be looked over occasionly, and any insect pests removed with a camel's-hair brush. Slugs will sometimes attack the plants, and they must be looked after also. When frost is imminent, the great thing is to have the plants as dry as possible; and really they are much more liable to be injured by wet than by frost. The plants should therefore be kept moderately dry during November, December, January, and February; at the end of the latter month they will begin to push into growth, when more water may be applied. About the first week in March, the old practice is to top-dress the plants by taking away an inch of the surface-soil and substituting some rich compost. In removing the soil, care must be taken that the rootlets, which are pretty near the surface round the base of the plants, be not disturbed. After the top-dressing the flower-spikes soon put in an appearance; and, in order to have finely-developed pips, the old florists used to thin out the flower pips so as to leave about six outside ones. By the end of April the plants would be in fine flower and fit for the exhibition table. It is necessary at this stage to shade the flowers from the sun to preserve their colours, and to have them as fresh and the lacing as perfect as possible. After blooming, the plants should be removed to a northern aspect, and kept in the shade, but not under the drip of trees, and stand on an ash bottom, and here they may be at rest for the summer. The plants should be kept free from dead foliage, and the attacks of thrips and snails be guarded against. The soil about the roots should be kept moist, but not excessively so. A little top-dressing may be added during the summer, to induce the plants to root high up, and, as it sometimes happens that a tap root decays, the surface roots maintain the vigour of the plants. Any variety required to produce seed should have a hand-glass placed over it, if any extra protection is deemed necessary. It is the practice of some growers to turn the balls out of the pots about the beginning or middle of June, and without reducing them in any way, plant them out in a shady and well-drained border, where the plants will remain till they are re-potted and divided in August; and this brings me to the matter of offsets or root division.

Propagation by Division.

The Polyanthus can scarcely be said to throw off offsets in the same way as the Auricula; rather it throws up two or three or more strong crowns, according to the strength of the plants, and perhaps one or two smaller ones. The crowns should be divided, and the strongest potted up to flower in spring, as already directed, and the smaller crowns potted singly into small pots. The old florists contended that a single crown produced by far the finest flowers. As to soil, good sod-soil from an old pasture, to the extent of about two-thirds, enriched with old manure and leaf mould, the latter in good proportion; in such a mixture the Polyanthus cannot fail to do well. Though the leaf mould is not absolutely necessary, yet it will ever be found, both in respect of the Auricula and the Polyanthus, that whenever there occurs in the soil a little mass of decaying leaves or sticks, there the roots will be most numerous and vigorous. Such practical hints on natural tendencies the observant florist ever treasures up, and it is by their observation and application that he becomes a more successful cultivator than his fellows. While I have been treating of the old Gold-laced Polyanthus, I must not overlook the claims of the Fancy kinds, as they have a great decorative value much beyond that possessed by the Gold-laced varieties. They are all very vigorous growers, and do not possess the delicacy of constitution peculiar to many of the high-bred Gold-laced varieties. In point of colour they range from pure white to deep purple, the individual pips are of great size, and the trusses correspondingly large. They well deserve to be taken in hand as exhibition plants, and this will no doubt be done before long, as some fine named varieties have been distributed. Among them are The Bride, white; Etna, magenta-crimson; Field Marshal, velvety-crimson; Jessie, bright rosy-violet; Viceroy, sulphur; and Warrior, rich shaded magenta.

Cultivation in Beds in the Open Ground.

The proper time for planting is the last week of July, the end of the period of the summer rest, and when the old plants have attained such maturity and size as to admit of easy division. It was always considered that this period of planting should be strictly observed, in order that the plants might have all the advantages of their natural autumnal growth, thereby becoming thoroughly established in the soil before winter, and ensuring a vigorous bloom in the spring, as well as obviating all chances of disease or death from the severity or changes of weather in their winter season of rest. "The plants should be carefully divided with a sharp knife, or neatly detached with the fingers if nearly separated, but not slit or torn up, though such injurious and unscientific practice has by many been recommended, on the whimsical theory that a lacerated wound in the Polyanthus or Auricula is sooner healed than an incised one! Lacerated wounds, both in plants and animals, are most dangerous." So wrote, in sober prose, one of the fine old Polyanthus cultivators of the past generation. In the case of planting in beds, as in pots, the main or tap-roots should be shortened to within an inch of the insertion of the leaves, that a few of the young and more vigorous roots only be retained. At the time of planting out, the roots should be divided as recommended in the case of plants potted, as previously set forth. The method of planting is perhaps the most important feature in the culture of the Polyanthus; it must be set deep in the soil. Having made a hole in the earth with a trowel, place the plant so deep therein that the very crown of the root is covered one inch with soil, for it is from this upper part that the young roots proceed; and hence it is essential that they at once meet with earth in which to grow and ramify. If this condition be not afforded, the plants will either dwindle and damp off from the perishing of these young roots, or we shall witness stunted plants, with bunches of curly fibres, struggling to reach the surface of the earth—a very common sight in a neglected border of Polyanthuses. The plants should be placed in rows, and be 8 inches apart each way. When planted thoroughly water the bed, and the plants will require no further care, unless a spell of dry weather sets in; and then, if the beds occupy an exposed position, they should be occasionally watered, and some leaf mould scattered over the surface to keep the soil cool and moist. All coverings in the way of protection during winter are wholly unnecessary, and even hurtful. In the spring the surface of the bed around the plants should be made neat and clean, and when the flower stems have risen and the flowers are about to expand, they should be protected by an awning from the rain or sun, or the freshness and richness of their colours will be deteriorated. If required for the purposes of exhibition, or for ornamenting a cool, airy greenhouse, or even a cold frame, they may be readily taken up, without risk or injury, with a ball of earth, and put into common-sized Auricula pots, being at the same time liberally supplied with water; when no longer required for such purposes, they must again be returned to the bed. When the bloom is over, and during the summer months, the plants still require no care beyond the ordinary attention of keeping them clean, and the earth moderately moist by occasional watering; for if the Polyanthus be subjected to excessive drought the plants are extremely apt to become infested with red spider, as indicated by the yellow mottling of the foliage.

Raising from Seed.

Seed should be sown in August soon after it is ripe. The great advantage derived from doing this is that the plants become of good size by spring, and flower the following spring finely, displaying their characters to the best advantage. The seed should be sown in pans or shallow boxes, and, as soon as large enough, pricked off into 48-sized pots, in some good soil, about six plants in a pot, and grown on strong during the summer. As a matter of course, when the seedlings flower only the very best should be retained and the indifferent ones thrown away. A large number may be raised from seed taken from the very best flowers, but only a very few of them are likely to have all the characteristics of a first-class Gold-laced Polyanthus. Seed of the fancy varieties will produce something much more satisfactory, because in this strain the grower is not confined to one particular type of flower. Quo.

Lilium giganteum in Scotland.—Perhaps it may interest some of the readers of The Garden, to know that this magnificent Lily grows out of doors, and is quite at home even farther north than Edinburgh. Handsome, no doubt, as was the specimen that grew in the garden of Professer Owen, yet I am happy to inform those interested in Lily culture, that two specimens of this Indian Lily grew on the banks of the Gareloch, that even surpassed the one at Sheen. In the summer of 1874, twelve bulbs were planted in a shady Rhododendron border, facing the west (previously they were grown in pots for the conservatory, but never gave satisfaction), and this summer I was pleased to see two flower-stems spring up. One grew to the height of 9 feet, and bore eleven fine flowers 7 inches in length; 6 inches from the ground the stem measured 7 inches in circumference. The other grew to the height of 7½ feet, and had ten flowers. I gave the plants no protection whatever from frost, and last winter was an unusually severe one in the west of Scotland. —D. McLean, *West Shandon Gardens.*

Roses in Spring.—I am anxious to have some good Rose trees, that will blossom in the spring, having no greenhouse or conservatory to fall back upon. Hitherto, I have only been able to have a few window Roses, and the disadvantages of a poor aspect to contend against. If some of the authorities on Rose culture, as Mr. Reynolds Hole, with his usual gallantry, would kindly assist a lady amateur by giving her a few hints as to what kind of frame to construct, the kinds of Roses to purchase, and when to prune and plant them, she would feel deeply grateful for the kindness.—M. L. W. [Though I am fully occupied by clerical work, I am constrained, by a summons from a lady's voice, to pass for a few minutes "from grave to gay," and to inform "M. L. W." that she may grow beautiful Roses in a frame during the season of spring, if the said frame is made frost-proof by artificial heat, for which purpose a boiler and pipes with hot water are by far most efficacious. My Rose pits are 2 feet 6 inches high at the back, and 1 foot 6 inches high in front (brickwork and woodwork inclusive), above the ground, and 1 foot deeper within. The sashes are 6 feet by 4 feet 6 inches. I place Dawrf Roses, either on their own roots, the Briar (seedling Briar preferred), or Manetti, which have been re-potted, or taken up from the open ground and potted, and pruned in October in the pits, accordingly as I want the flowers, from this time (my first batch are now in healthy foliage) until February, so that I may have Roses in March, April, and May, before the garden Roses bloom. I have given a select list of the varieties which do best in pots in the last edition of my "Book about Roses;" but if "M. L. W." has it not, she may safely venture upon nearly all the more robust kinds, such as Marquise de Castillane, Etienne Levet, Baroness Rothschild, and others. Let her diligently obey, as laws which, like those of the Medes and Persians, alter not, the following injunctions—to force her Roses as gradually as she can, avoiding variations of temperatures; to give air whenever the air is neither rough nor cold; to destroy insects by mild and frequent fumigation.—S. R. H.]

Tree Ivy in Shrubberies.—By way of change, I was induced some years ago to try Ivy in a kind of wilderness or grove that we have here. It occurred to me then to collect some large roots of trees that had been felled, and on which some of the fine roots had been allowed to remain. Of these, which were similar to those sometimes used in the construction of Ferneries, three or four were laid together roughly, and in no arbitrary form, to a height of from 2 to 4 feet. Some plants of Ivy were then planted all round and twisted in between the small roots; and with very little attention afterwards they were soon covered over. The result doubly repaid for the labour by the improvement that was effected in the appearance of the shrubbery, which was planted with common kinds of shrubs, chiefly evergreens, with a few flowering kinds; whilst the border next the path contained various kinds of dwarf Vincas in masses. Between these are beds of Lily of the Valley, common Ferns, Daffodils, Primroses, with other spring flowers, which produce a very pretty effect. An irregular avenue of Beech trees runs through the centre near the path, and all the plants seem at home under a grateful shade. I find that the Irish Ivy answers best, as it grows better and covers more quickly. One root I planted with a small-leaved kind, but it has not done so well. I have not tried the variegated kinds, and I fear they would be too delicate.—W. Divers, *Wierton, Maidstone.*

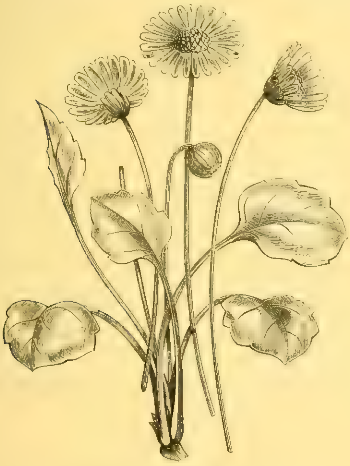
DISEASE AMONG LILIES.

Mr. A. S. Fuller, tells a sad story in "Moore's Rural," of the destruction of a large collection of Lilies, by a disease which he fails to account for. It is not often that disease attacks our hardy ornamental plants, although the agriculturist frequently suffers severe losses from rust, smut, and mildew in his grain fields, or rot among the Potatoes. Ten years ago Lilies were an especial favourite of mine, and I would scarcely dare tell of the investments made in rare kinds imported from abroad. But the Golden-banded Lily of Japan at £6 per dozen and Lilium Browni, at a no less price, were two that came in for a goodly share of attention. But it is not necessary to consult my cash book in order to arrive at the fact which I desire to place on record at this time. I will say, however, that at a certain period, not more than half-a-dozen years since, 10,000 Lilies bloomed in my garden, and of the various species and varieties found in different parts of the world. There were in one bed 5,000 of the Golden-banded (L. auratum) all in bloom at one time, and in another 1,000 of the long-flowered white (L. longiflorum), also about the same number each of the showy speciosum or, as it is more usually termed, lancifolium. Then there were half-dozens and dozens of the more or less rare kinds scattered about to make the collection complete. My success in the culture of this showy family of plants was so great that I began to think strongly of devoting my entire grounds to Lilies, and of eventually entering the market with the produce; but alas! there is usually an end to air castles as well as those of more substantial structure. The next season, after my grandest supply of Lilies, I noticed that some few varieties showed signs of disease; the stems and leaves assumed a rusty appearance, and small black spots appeared on the bulbs, as well as on parts above ground, such affected plants failing to bloom, and the bulbs in autumn were soft and immature. I lifted the bulbs and re-planted in new beds, applied ashes, lime, and various other substances, in order to stay the progress of this disease, if possible; but all to no purpose. It continued to spread, taking in its course even the old Tiger Lilies, as well as the common wild species which had been transplanted from the fields and swamps near by into the garden. Bulbs taken up from the garden and placed in my green-house immediately assumed their wonted vigour and health, and not a sign of disease has ever appeared upon a plant grown in pots; but of my fine collection left out not a half-dozen bulbs survive. The bed once occupied by auratums has been planted with evergreens, and last summer I saw two or three stray plants blooming, half hidden among the dense foliage of some Arbor-vitæs, and these, with one lone double Tiger Lily, are the only representatives left in my grounds of the noble family of plants which a few years since made large demands upon my purse and time, as well as excited my admiration and pride. Now, it is not pleasant to recount one's failure in such matters; still, it is just possible that by recording the disaster which followed my "Lily fever" some novice in floriculture will be put on his guard, not to count chickens until they are out of danger of the pip. Perhaps it will be well to state that my land is a light, sandy loam, well under-drained naturally; consequently, if the Lily disease was caused by incongenial soil, it must have been on account of its being too warm and dry. But the Lilies did thrive remarkably well for a half-dozen years or more, and I think the rust was introduced among the imported Japanese sorts, as no sign of any disease was ever seen among my Lilies until the latter were purchased and planted out.

A New Race of Zinnias.—The "Gardeners' Chronicle" describes some new double Zinnias raised on the Continent, which show considerable variety of colour, and represent four diverse types, differing, it would seem, in habit and stature. One of them, Z. Darwinii major, is described as of compact branched habit, with large globular flower-heads. These flower-heads reached us in a somewhat shrivelled state, but they were densely double, and measured fully 2 inches across and about 1½ inch in depth. The leaves (those only just beneath the flowers being seen) were sessile, triangular-ovate with an acute point, and three-nerved. The colours of the flowers included scarlet, orange-scarlet, orange-yellow, rosy-purple, sulphur, and white. Z. Darwinii vittata had striped flowers, including such combinations as white with purple flakes, purple with white flakes, yellow with crimson flakes, sulphur with purple flakes, &c. Others labelled Z. Darwinii were described as being of dwarf compact-growing habit and extremely free-flowering; the flower-heads were conical and imbricately double, and differed from the others in being smaller, about 1½ inch across and 1¼ inch deep, very full double, with a high centre; the colours were considerably varied, and included white, sulphur, yellow, orange, and two or three shades between purple and crimson. Z. Darwinii pyramidalis vittata is taller in habit, growing like an inverted pyramid, and the forms sent were mostly pale-coloured, more or less flaked. This new form of Zinnia is, we learn, a hybrid raised between Z. Haageana (mexicanum) and Z. elegans, and is said to be very constant. It is abundantly distinct in character from the beautiful double forms of Zinnia elegans now becoming popular, and, so far as can be judged from cut flowers, appears to be quite an acquisition for the flower garden. With the Zinnias came two forms of garden Beet with coloured foliage, not of any special merit. The best had the leaves smooth and of a glossy somewhat liver-coloured red; the other had the leaves rough and of a dull purplish hue.

A BLUE DAISY.

To our ordinary Daisies, now so much used for spring decoration, this will prove a valuable addition. It is described as being one of the commonest of spring flowers in different parts of Morocco, abounding in fields with a rich soil on the hills near Tangier, and occurring in great profusion by the water courses of the valleys of the Greater Atlas in latitude 31°, at elevations of from 4,000 to 11,000 feet. This blue variety, first found by M. Balansa during his journey in Moroccco in 1867, has been introduced to this country by Mr. Maw, and it is already tolerably well known in our best gardens. The best specimen of it which we have yet seen was one in the herbaceous border at Chiswick in the autumn of the present year, a dense little tuft 9 inches in diameter, bearing twenty-one fully-expanded flowers. It appears to like a deep rich soil, and to require no particular attention. It is best propagated by careful division in the spring. B.



Bellis rotundifolia cœrulescens.

Sedum villosum.—Though this pretty species is not uncommon by the sides of Alpine rills in Scotland and the north of England, it is, I believe, not generally known in the southern parts of our island. I saw it in great beauty growing in a shallow brook near to St. Moritz in company with Sundews and Butterworts. The plant itself was immersed in water, the panicle of deep lilac flowers alone rising above the surface, and resting on the water. Its habitat seemed so much at variance with the succulent leaves of the plant, that I thought it could hardly be a Sedum! A viscid glandular pubescence clothes the upper parts of the plant. Koch speaks of it as a biennial, and he describes the petals as roseate, with a purple dorsal streak. In drying, I find that the colours have become darker in hue.—Peter Inchbald, *Hovingham Lodge, York.*

Saponaria Ocymoides on the Continent.—Of all the Saponarias I have seen, during my visits to the Continent, none is so beautiful and conspicuous as this species. It occurs abundantly in the eastern parts of Switzerland—such as Tyrol and the Grisons—where it seems to delight in a loose and stony soil. It is as dwarf in habit, and as free to flower as S. calabrica itself; but its flowers are larger, and deeper in colour, and in warm, sunny nooks, the little tufted plants are covered with flowers, so that the leaves and stems are quite hidden by them. It must be an excellent plant for rock-work, for I noticed that it soon seizes upon freshly-built earthwork, insinuating itself into the crevices of the stones, and hanging down in dense masses of deep rose. I first saw it in the Albula Pass, and at the time I wondered what it could be, mistaking it, as so many do, for a Lychnis, but on gathering it I soon found out my error.—Peter Inchbald, *Hovingham Lodge, York.*

POLYGONUM CUSPIDATUM COMPACTUM.

This is a beautiful form of a well-known species which is really more distinct in character, for ornamental purposes at least, than many of the so-called species introduced to us. The writer observed the plant recently in the nursery of Mr. Parker, at Tooting, and was very much pleased with its beautiful compact habit and its floriferousness. P. cuspidatum is tall and straggling in growth, with a thinness of foliage and looseness of flower-spikes which leaves much to be desired in it for ornamental purposes. The dwarf variety is, however, one of the most ornamental autumn-flowering plants that I have seen for some time. It is the counterpart of the tall form, with the stems compressed to about a foot in height. Along with this shortening of stem there is little or no reduction of the number of joints, and consequently the foliage and flowers are much more dense. The leaves are shorter and narrower than they are in the normal form, and the flower-spikes are shorter, more crowded, and nearly erect; but the colour is the same in both forms,—a beautiful straw colour. It flowers during September and October. The plant originated in Mr. Parker's nursery some time ago, on a spot where the tall form had been previously grown, and luckily it was not destroyed, under the supposition that it was the ordinary form, until its superior characteristics were observable. It stands in need of a distinctive name, and I would suggest that it should be compactum, as being the most suggestive of the desirable features of the tall form being joined without diminution to a very compact habit. It is a beautiful plant for the herbaceous or mixed border, and for rock-work.—" The Gardener." [We regret to see any attempt to judge such plants as the stately and valuable Polygonum cuspidatum, from a florists' point of view. It is the fine free habit of this giant Polygonum which makes it effective in the picturesque garden. Mr. Parker's plant may be a desirable one, and an interesting variation, but we may state these facts without undervaluing one of the best hardy plants ever introduced. As to its being "out of place in select positions," Mr Gibson used it with good effect at Battersea, in the sub-tropical garden. As a lawn plant, singly in small groups, near shrubberies, it is very fine in rich soils.]

Newspaper Bye-Laws.—1. Be brief. 2. Be pointed. Do not write all around a subject without touching it. 3. State facts, but do not stop to moralise. Let the reader do his own dreaming. 4. Eschew preface. Plunge at once into your subject, like a swimmer into cold water. 5. If you have written a sentence that you think particularly fine, draw your pen through it. 6. Condense. Make sure that you really have an idea, and then record it in the shortest possible terms. 7. When your article is completed strike out nine-tenths of the adjectives.

Atoms.—By four different modes of argument derived from different parts of science, and pointing mainly to the same conclusion, Sir W. Thomson has shown that the distance between two molecules in a drop of water is such that there are between five hundred millions and five thousand millions of them in an inch. He expresses that result in this way—that if you were to magnify a drop of water to the size of the earth, then the coarseness of the graining of it would be something between that of cricket balls and small shot. Or we may express it in this rather striking way. You know that the best microscopes can be made to magnify from 6,000 to 8,000 times. A microscope which would magnify that result as much again would show the molecular structure of water.

Billings on Bonnet Flowers.—Flours are worn this seazon quite mutch on bonnets. I saw a luv of a hat last week at Madame Frisky's. It lookt mutch like a bokay for a target excurshun, presented bi sum alderman to the constiuents ov his ward. Thare waz Sunflours and Pond Lilys, Hollyhawks and Dandylions, enuff to stok a forty aker garden. I waz told that the bonnet waz the very kream ov style, and the price was a mere song, only seventeen pounds. I wanted to buy the dear thing and set it out in my front yard and water it and see it gro, but it had been sold to a coal dealer's wife.

"The show of the —— Society was the best ever held since its organisation," is a sentence which should be "kept standing" in every well-regulated newspaper establishment during the flower show season.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pelargoniums, Calceolarias, and Fuchsias.—Pelargoniums, intended for flowering early, will now have made considerable growth. Although, for decorative purposes, it is neither needful nor advisable to train them as is usually done when they are intended for exhibition, yet—in order to keep the shoots from becoming "drawn"—they should be well opened out, so as to admit plenty of light to those in the centre. All sticks, required for their support when in flower, should at once be placed to them, and the shoots tied thereto; for, later in the season, the soil gets filled with roots, and the insertion of the sticks then often causes serious mutilation. Fancy varieties should also have sticks placed to them; but they do not need so much support as large-flowered sorts. Such plants as bloomed latest during the past summer, and which were not cut down and shaken out until late in the season, will now require placing in their flowering-pots. These also will be better for being tied at once. The points of the shoots ought to be pinched out, which will have the effect of causing them to flower later, and thus form a succession to the earliest, which should not be stopped at all, except such as are young and very vigorous. Place them as near the light as possible. The earliest-sown herbaceous Calceolarias should now be moved into their flowering pots. These rapid-rooting subjects get hold of the soil in a very few weeks, and do much better for being moved to their blooming pots early; for this final shift, let the soil be rich and light, using amongst it a good quantity of leaf mould, a material in which the roots of soft-wooded plants delight, and it may not be out of place to remind those who have not had much experience in plant-growing that the ability to produce an abundance of flowers with most pot plants, especially those of quick growth, in a great measure depends upon the amount of roots which they possess. Old plants of Fuchsias rested under greenhouse stages, or in similar out-of-the-way places, should not be allowed to become dust-dry, as in that case many of the roots perish. On the contrary give them a little water at intervals so as to prevent such an occurrence. They should now be pruned, cutting back the side shoots to within a couple of eyes of the main stem, and shortening the latter to about 18 inches above the pot; for, if left too high, the bottom of the plants do not get furnished with flowering shoots. It is always better to prune Fuchsias some time before they are started into growth than afterwards, as, if not so treated, they frequently bleed so much as to weaken them. Where any of these old plants are required in bloom early they should be at once placed in a light situation, but do not excite them by putting them into heat.

Vineries.—Vines should at once be pruned, an operation in which it is not advisable to be too much guided by mere appearances; gardeners experienced in Vine culture generally prune close, as when so managed the canes look best, but this is frequently carried too far, consistent with the certainty of obtaining good crops. Vines under the care of amateurs, seldom have their wood well ripened, especially after such a damp dull autumn as the last, and when this is the case, very close pruning is calculated to still further reduce the chances of a crop. Amateurs should not therefore prune too close, but should leave at least two eyes to each shoot after being cut back. Long spurs are certainly unsightly, and by thus treating the shoots, the spurs soon get a considerable length, but it is better to leave them long than endanger the crop; if, when the Vines break both eyes show bunches, that which is furthest from the spur can be rubbed off. It is usual after pruning to dress Vines with some mixture, calculated to destroy the eggs of red spider or thrips that may have infested them during the summer, for it seldom happens that red spider at least is altogether absent. To more effectually eradicate all traces of this pest, it is customary to strip off the old bark, a questionable practice; but no harm can result from removing any that is loose. To scrape off the whole covering, as is often done, is, however, unnatural, the baneful effects of which are evident from the fact that Vines subjected to such treatment never thicken out as they ought to do. The dressing just alluded to ought to be applied as soon as they are pruned; for, if delayed until the buds begin to swell, they sometimes get injured, especially if sulphur is used in considerable quantity. The safest mixture is clay and water well worked up to the consistency of thick paint; in this mix a little fresh cow-dung to make it stick, and to each gallon of the mixture add 1 pound of sulphur and a little soot, keeping the whole well stirred as it is used, otherwise the sulphur will settle to the bottom; for laying it on, an ordinary paint-brush may be employed, or the more customary substitute made of bast tied to a short stick may be resorted to. The chief point is to see that the mixture gets into every crevice, so as to cover the whole, from the surface of the soil to the extreme points. It is the more requisite to get every part of the young wood covered if thrips has been present during the preceding summer, as the eggs of this pest will be found on the young wood, sealed up under small, black, varnish-like spots, under which they lie secure until brought to light by warmth. If there are inside borders, a couple of inches of the surface soil may be taken off and re-placed with fresh material. The wood-work should also be well scrubbed with soap and water, painted, if required, previously washing the glass and lime-washing the brick-work. The Vines, when dressed, may be tied lengthways across the front lights or lower part of the roof, where they can remain till the buds have broken. Early forcing is not to be recommended, except under experienced cultivators, as the chances of losing a crop, in the case of early-started Vines, are much greater than if they are pushed into growth later in the spring.

Peaches.—Where these are grown under glass they should at once be pruned, as if deferred later the buds will begin to swell, after which they are easily rubbed off. In pruning Peaches and Nectarines, judgment is required not only to leave the best-placed shoots for the present season's crop, but also such as will produce bearing wood to furnish the trees evenly for the following year. Do not leave the shoots too close, as anything approaching overcrowding is worse in its effects with trees under glass than in the case of those on open walls, where there is nothing to obstruct light. Wood-buds are easily distinguished from fruit-buds by their being so much smaller and more elongated. See that one of these thin buds is left at the point to which every shoot is cut back, for if they are absent there can be no growth made from the end of the shoot, the effect of which will be that the fruit upon it will not swell freely owing to there being no shoot to draw up the sap. When pruned, the trees should immediately receive their winter dressing, for which purpose Gishurst and similar compounds are often recommended; but, unless used by those who are experienced serious mischief is frequently the result, the bloom buds often falling off in quantities. Even if applied with the greatest care this will happen, if the dressing is too strong. A mixture, similar to that recommended for Vines, is much safer, and if applied so as to reach every crevice, will be found perfectly effectual. In laying it on, care must be taken to touch the buds very lightly or they will be injured. When this kind of work is finished let the trees be tied; in doing this the bast should in all cases be crossed between the wire and the shoots, so as to keep the latter from coming in contact with the iron; never let the ties be drawn tightly; on the contrary, leave enough room for the expansion of the shoots. Give the house a thorough cleaning, both woodwork and glass, so as to impart to the whole a neat, orderly appearance, and admit as much light as possible; scrape off an inch or two of the surface soil in the way already recommended, and re-place it with new loam and rotten manure. On no account allow Peach borders to get dry. Peaches are never quite at rest; even when without leaves the buds are slowly swelling, and if ever the soil gets too dry they are certain to suffer more or less, frequently resulting in large numbers falling off. Peaches and Nectarines, with their roots in inside borders, often suffer more through this cause than any other.

Conservatories.

Continue to wage war with all insect pests, such as thrips and scale. Half measures are of no avail with these; indeed, nothing but hand-washing or immersing the heads of plants infested with them in strong solutions of Fowler's or some other insecticide will rid them of these pests. Where it can be done, the latter is the quickest and surest way of destroying them, as with hand-washing some are almost sure to escape, and these soon re-stock the plants with their progeny. By taking the plants in hand at once, while they are at rest, they will stand a much stronger solution of insecticide than at any other time. In the case of thrips and scale, it requires from 4 to 6 ounces of insecticide to the gallon of water to make sure of its being effectual. White scale, the most troublesome of all insect pests, is sure to effect a lodgement on the old stems of Tacsonias, and if not cleared off, they soon make their way to the young leaves and branches. Where the stems of creepers are infested with these, they should at once be scrubbed with a tolerably hard scrubbing-brush, using, at the same time, any of the insecticides to work into the crevices. As the young wood of Tacsonias goes out of bloom, it may be gradually cut away, so as to induce them to break well back, and start afresh with increased vigour. Guard carefully against damp by removing any dead or decaying leaves or petals as they occur. Maintain a uniform temperature of 45° to 50°, which will be found quite warm enough to accommodate almost any flowering plant at this season, excepting the more tender stove varieties. Where Camellias have to be subjected to artificial heat, they should have a gentle be-dewing with clear soft water, so as to keep the leaves and buds moist, or the latter will be apt to fall off. Others expanding their bloom must be kept in a cool dry atmosphere, or the flowers quickly become discoloured. While swelling their buds, and carrying a crop of bloom, they must have plentiful supplies of water, as the energies of the plants are then taxed to the utmost. Clarified soot-water, mixed with clear liquid manure, will be found of the greatest assistance during the period of blooming. Soot water imparts a luxuriant green tinge to the foliage, and is one of the safest and best fertilisers it is possible to employ. Weak solutions of guano-water, in the proportion of two tablespoonfuls to four gallons of water, have likewise a very beneficial effect, and they have the advantage over ordinary liquid manure of being usable without being offensive. With Primulas, Cinerarias, Libonias, Epacrises, Heaths, Mignonette, Cyclamens, Schizostylis, &c., there is no lack of bloom even at this dull season. Backs of greenhouse stages, or other similar places under glass, may be turned to good account in forwarding many of the deciduous plants intended for forcing. By placing them in positions of that kind they come on slowly, and require much less forcing than if left exposed to the weather. Such things as hardy Azaleas, Wiegelas, Lilacs, and numerous other plants of that class, may even be helped forward in any close shed by keeping them well syringed.

Stove and Greenhouse Ferns.

In too many instances one house has to serve for both of these classes, and, where this is the case, neither can have the proper treatment they require, without in some way interfering with the health and well-being of the other. The stove varieties being of most value, and the first to suffer if the temperature of the house is unduly depressed to suit other kinds, should of necessity have the first consideration, and the treatment of the greenhouse kinds be made subordinate to these. Most of the former will winter safely in a temperature of 50° to 55°, with a slight rise during the day, and nothing is gained by having more heat than is absolutely necessary. In the case of some of the most tender, such as the Gymnogrammas and some of the Nothochlænas, the lightest and warmest part of the house should be chosen to place them in during the winter months. By keeping them moderately dry at the root, so as to prevent flagging, and with the atmosphere as dry as is consistent with the safety and welfare of the other occupants of the house, they will be found to winter well, and start with more vigour in the spring than if subjected to a higher temperature. Where greenhouse kinds have to be grown in the same house they should be ranged at the coolest end, and be kept as dry as possible without allowing them to flag, so as to prevent them starting into growth. Peat and loam should at once be got under cover, that it may be kept dry and in good condition for potting purposes, as the time for this is at hand.—J. S. W. P.

Indoor Fruit Department.

Vines.—In many instances fruit will be set on the earliest started pot Vines, and where all the bunches that have appeared are still hanging, they should all be cut off except the best formed and set, six of which will be enough for a crop. It often happens that the finest bunches are produced close to the top of the cane, and if those lower down are indifferent, the bulk of the crop may be left on the top. The berries on the bunches left must be thinned as soon as they are the size of small Peas. Black Hamburghs must not be thinned so much as they require to be on established Vines, as in the case of pot Vines they seldom swell more than three-quarters their natural size. Royal Muscadine, Duchess of Buccleuch, and Grizzly and White Frontignans are naturally very small berried sorts, and great care must be taken not to over-thin them. As the bunches on these varieties are also small, strong Vines may be allowed to bear eight of them. After the thinning is over each shoot should be constantly pinched at two joints beyond the bunch. Shoots with no fruit on them may be restricted to four joints. Syringe every afternoon with tepid water, give the roots a little guano at every alternate watering and continue to do this until the fruit begins to ripen. The temperature may be kept at about 70° at night, and 75° throughout the day. Where Vineries are being started, high temperatures must be positively avoided, 55° at night and 60° during the day will be quite heat enough, the exception being 5° more with sun heat, or 5° less on extremely cold nights. A good bed of leaves and litter should be placed on the inside border and see that cold is excluded from that on the outside. Continue to stop and tie the shoots of permanent Vines, and when they come into bloom cease syringing. The atmosphere, too, should then be kept comparatively dry, and cold draughts must be guarded against.

Pines.—Queens lately placed in a forcing temperature will now be starting into growth, and should be liberally supplied with water at the root. Where the pots have been loosened to permit excessive bottom-heat to escape, replace the plunging material firmly about them, when the heat has subsided to 80°. The atmospheric temperatures may now be increased 5°; keep succession Queens at rest and look over suckers in small pots in order to see that the roots are not suffering from want of water. If the plunging material is very dry, as it is apt to become under constant firing, give it a good watering so as to keep it in a fresh healthy state.—J. Muir.

Kitchen Garden.

The kitchen garden must, of necessity, ever stand at the head of all the departments of gardening; not because it requires more skill in its management, but because so much is expected from it, and that daily throughout the year. The allowances generally so freely made for the fickleness of fruit crops through bad weather, do not extend to the vegetable department from which supplies must at all times, and under all circumstances, be forthcoming. Hence the reason I attach to it so much importance, and I would urge on young gardeners, especially if they wish to succeed, the desirability of thoroughly mastering this branch of gardening. I am sorry, however, to say that I have occasionally met with young men who have had the greatest contempt for kitchen gardening. To young men of this description, my notes will be of little service, but to those who, like myself, are specially interested in kitchen gardening, the hints which I shall give from week to week during the coming year, will, I hope, prove of value; first, as reminders of work to be done, and secondly, as to how and when to do it. The continuous rains which we have had throughout the autumn and early winter months having prevented the performance of trenching, digging, and draining operations, on every fine day now such work should be advanced a step, in order that the ground may have the full advantage of the action of frost upon it, such action being especially desirable on heavy, retentive soils. On frosty mornings, when the ground is firm and dry, manure should be wheeled on to vacant plots ready to be dug or trenched in on the disappearance of frost. Clear the dead stems off Asparagus plantations, and cover them thickly with rotten manure; afterwards give them a liberal dressing of coarse salt, to be washed in by the rain. I do not approve of the ordinary way of growing this vegetable, viz., in 4 feet beds, with a deep alley between them, half the roots being naked. I prefer to plant on the level ground, in rows 2 feet apart, dressing and manuring them annually, as has just been named. Sow a few Broad Beans on a ridge or warm border, Early Dwarf Cluster and Early Long Pod being the best kinds for the purpose. Also, sow a few rows of Peas, such as Ringleader and William the First. The last-named variety is a wrinkled Marrow, as early as Ringleader, and more productive. Any Peas that are up should have some soil drawn to them, as a protection from cutting winds, frost, and vermin. Birds (sparrows in particular) are very fond of pinching out the points of the young shoots as soon as they are through the ground. A good deterrent, and also a valuable fertiliser, is an occasional sprinkling of soot over the rows. Brussels Sprouts, a vegetable in use all through the dead of winter, require a very long season if wanted to be extra fine; they are, therefore, best sown in autumn, and left in the seed beds till spring. If not sown then, however, sow at once, in drills, 9 inches apart; cover the seed very slightly, and protect it with netting from birds. Imported seed is the best, because it grows the tallest, and consequently produces the largest number of Sprouts. Cauliflower plants under hand-lights, cloches, or in frames, should be fully exposed whenever the weather is favourable. These are generally kept too close, the impression being that such treatment will cause them to head early; but that is a mistake, as they will come in no sooner, and are much more liable to "button" than when brought up sturdier. We have yet a few heads of that best of all Cauliflowers, Veitch's Autumn Giant, a kind which has furnished a supply of good Cauliflowers till Snow's Broccoli came in. From the latter, we have been cutting for some time, and others are ready to be taken up and put in sheds or frames on the first appearance of severe weather. Early kinds of Potatoes may now be started to sprout in warmth. Lay them in shallow boxes filled with sifted leaf mould, and give them occasional sprinklings with a fine rosed water-pot or syringe. As soon as sprouted and well rooted, pull off all the shoots except two, and plant them deeply on warm borders that can be readily protected if required. Start and treat them in a similar manner, for planting in pits, frames, or pots. Our first supply is always from pots, and it generally turns out satisfactorily. Three tubers are planted deeply in a 8-sized pot, and are earthed up as the haulm progresses; the temperature of a newly-started Vinery or Peach house suits them well, and they can be easily moved to other quarters when desired. Have the necessary protection ready for Celery, Lettuce, Endive, and Parsley, in case of severe frost; straw hurdles are the neatest, handiest, and most effectual protectors that can be employed for such purposes. Keep up successional supplies of Asparagus by making up a fresh bed about every three weeks. In bad weather look over stores of Beet, Potatoes, Onions, Jerusalem Artichokes, and Carrots, removing every trace of decay, as one bad root soon infests a large number.—W. Wildsmith, *Heckfield.*

PLATE I.

THE GREAT ST. BRUNO'S LILY.

Drawn by F. W. BURBIDGE.

THIS is a noble variety of a very beautiful alpine flower. It is as pure in colour as the White Wood Lily of the North American woods (Trillium grandiflorum), and is unlike the common alpine form, tall and stately as a true Lily, with long and elegant grassy leaves, and a delicate and welcome odour. We have not seen this large form in a wild state, if, indeed, it so exists. When the early summer traveller first crawls down from the cold and snowy pass of a Savoy Alp into the grateful warmth and English-meadow-like freshness of the valley, most likely the first flower he notices in the fresh Grass on the side of the valley is a small Lily-like blossom, standing about level with the tops of the blades of Grass and the Orchises. The blooms, about 2 inches long, so clearly and delicately white that they might well pass for emblems of purity, have each division faintly tipped with pale green. One or perhaps two stems spring up here and there all over the meadows, and the effect of the half-pendent Lilies is very beautiful. The description and synonyms given of this plant in "Curtis's Magazine" are the text for a good deal of amusing comments on botanical nomenclature and its difficulties in the first number of Mr. Ruskin's "Proserpina." His favourite, however, seems to be the branched Anthericum Liliago, which is by no means so fair a flower as the single-stemmed and true St. Bruno's Lily. The variety now figured I saw for the first time last summer in Messrs. E. G. Henderson's nursery, at St. John's Wood, and from the specimens then gathered and brought to THE GARDEN office Mr. Burbidge made the sketch of which our plate is a reproduction. It speaks for itself. The plant will be found to be one of easy culture on warm free soils. Slight shelter would prove beneficial, and that may readily be obtained by planting it among rather dwarf shrubs. It is valuable for the mixed border, and, when plentiful enough, would prove worthy of naturalisation in open spots in semi-wild places where the soil is good. It may be most readily increased both by division and seeds, but is as yet scarce in nurseries. W. R.

THE LIBRARY.

"GARDENING FOR PLEASURE."*

THIS is a handy little book, and one for which we have a hearty welcome, for it is rarely that we find so much sound and practical advice given so plainly, or contained in so small a compass. Extending through 250 well-printed pages, and amply illustrated throughout, we have ably written and exhaustive little essays on soil and locality, drainage, manures, lawns, designs for gardens (which, by-the-bye, are not first-rate, and convey no new ideas to the intelligent reader), bulbs, propagation by seeds and cuttings, grafting and budding, tropical bulbs and seeds, potting plants, winter flowering plants, remedies for unhealthy plants, hanging baskets, and window gardening. We have also chapters on the cultivation of plants in rooms, wardian cases and Fern shades, how to force certain plants, greenhouses, Graperies, heating by hot water, cold houses and pits, combined cellar and greenhouse, hot-beds, insects, and diseases, besides many other suggestively-written pages on the fruit and vegetable garden, with excellent selections of the best and most profitable kinds to grow. The chapters on fruits and vegetables are well illustrated, as is also the essay devoted to garden implements, while the whole book is aptly concluded by a most excellent monthly calendar of operations. As a matter of course, this book is written for American readers, and the selections are made with a view to suit a climate which differs in many important points from ours; notwithstanding this, however, it would be useful to many English cultivators. To such we can confidently recommend it as being generally a straightforward little book from the hand of a thoroughly practical horticulturist. We here give Mr. Henderson's remarks on mulching and shading, which will convey to the amateur some idea of the practical and suggestive contents of this work:

Mulching.—Litter of any kind, placed around newly planted trees to prevent evaporation from the soil, was the original meaning of mulch, but it is at present extended to include a covering of the soil applied at any time, and for very different purposes. Good cultivators apply hay, straw, or other litter to the surface of the soil to protect the roots of certain plants against the action of frost, it being useful, not so much against freezing as to prevent the alternate freezing and thawing, that is apt to occur in our variable and uncertain climate, even in mid-winter. As mentioned under Strawberry culture, the mulch applied in the fall protects the roots during winter; it is allowed to remain on the bed where, if thick enough, it keeps down weeds, and prevents the evaporation of moisture from the soil during the dry time we are apt to have between the flowering and the ripening of the Strawberry. Besides all this, it makes a clean bed for the fruit to rest upon, and should a driving shower come up as the fruit is ripening, there is no danger that the berries will be splashed with mud and spoiled. The utility of a mulch is not confined to the Strawberry among fruits; Raspberries and Currants are much benefited by it, and by its use a gardener of my acquaintance succeeds in growing fine crops of the fine varieties of English Gooseberries, a fruit with which very few succeed in our hot summers. Newly planted trees, whether of fruit or ornamental kinds, are much benefited by a mulch, and its application often settles the question of success or failure. We have known a whole Pear orchard to be mulched, and the owner thought its cost was more than repaid by saving the fallen fruit from bruises. The rooting of a layer is by some gardeners thought to be facilitated by placing a flat stone over the buried branch; the fact being that the stone acts as a mulch, and prevents the soil around the cut portion from drying out, and greatly favours the rooting process. Even in the vegetable garden, mulching is found useful, especially with Cauliflowers, which find our summers quite too dry. The material of the mulch is not of much importance, the effect being purely mechanical, one kind of litter will answer as well as another; the material will be governed in great measure by locality; those living near salt water will find salt-hay, as hay from the marshes is called, the most readily procured; those who live near Pine forests use the fallen leaves, or Pine needles as they are called; in the grain-growing districts straw is abundant, and nothing can be better; it can be applied more thoroughly if run through a cutter, though the thrashing-machine often makes it short enough. Leaves are Nature's own mulch, and answer admirably; if there is danger of their being blown away, brushwood laid over them, or even a little earth sprinkled on them will keep them in place. Tan-bark and sawdust may serve for some uses, but they are very bad for Strawberries, their finer particles being about as objectionable as the soil. One of the best materials to use for summer mulching is the green Grass mowed from lawns. This applied, to the thickness of 2 or 3 inches, around the roots of all kinds of small fruits, will be found not only to greatly benefit the crop, particularly in dry weather, but will save greatly in labour by preventing the growth of weeds. One of our best private gardeners in the vicinity of New York has adopted this summer mulching with the Grass from the lawn for nearly twenty years, and has succeeded in growing all kinds of small fruits in the highest degree of perfection.

Shading.—In mulching the object is to prevent evaporation from the soil, as well as to shield the roots from sudden changes of temperature; it is often necessary to protect the whole plant in this respect, and this is accomplished by shading. Although on a large scale, we can do little in the way of shading plants in the open ground, yet the amateur will often find it of great utility, as screening will frequently save a recently transplanted plant, which without it would be quite ruined by a few hours' exposure to the sun. For shading small plants in the border, such as transplanted annuals, a few shingles will be found very useful, one or two of these can be stuck in the ground so as to completely protect the delicate plant, and yet not deprive it of air. Six-inch boards of half-inch stuff nailed together, to form a V-shaped trough, are very useful in the garden; they are handy to place over small plants during cold nights, and may be turned over and set to make a screen against strong winds, or used for shading plants in rows. Seedlings often suffer from the heat of the sun in the middle of the day; the seedlings of even the hardiest forest trees are very delicate when young. The seeds of such trees when sown naturally almost always fall where the young plant will be shaded, and the amateur who experiments in this very interesting branch of horticulture, the raising of evergreen and deciduous trees and shrubs from seed, will find it necessary to imitate Nature and protect his young seedlings from the intense heat of the sun. There are several

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* "Gardening for Pleasure. A Guide to the Amateur in the Fruit, Vegetable, and Flower Garden," &c. By Peter Henderson. New York: Orange Judd Company. 1875.

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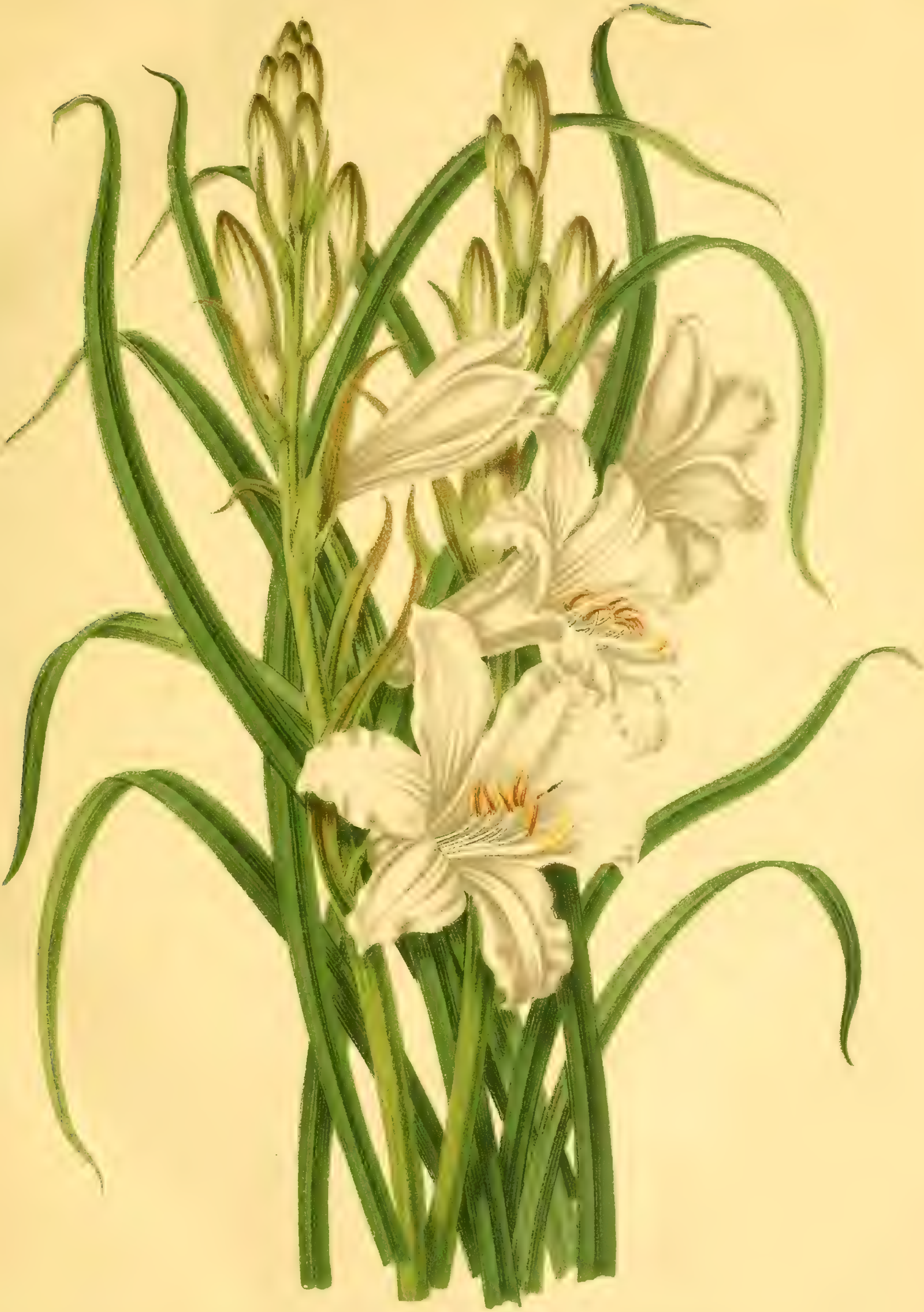


GREAT ST BRUNO'S LILY. ANTHERICUM LILIASTRUM VAR.

ways of doing this; if the seeds have been sown in an open border, let him take twigs about a foot long, evergreen if they can be had, but, if not, those from any deciduous tree, and stick them a few inches apart all over the bed. This will give the seedlings very much such a protection as they would naturally have had in the shade of other plants, and though evergreens will look better for a while, the dead leaves of deciduous twigs will give quite as useful a shade. It is always safer to grow seeds in a frame, as the young plants are then under more complete control. Frames are easily shaded by means of a lattice made of common laths. Strips of inch stuff, 1½ or 2 inches wide, are used for the sides of the lattice, and laths are nailed across as far apart as their own width. One lath being nailed on, another is laid on to mark the distance, the third one put down and nailed, and the second one is moved along to mark the distance for the fourth, and so on. With a screen of this kind there is abundant light, but the sun does not shine long at a time on one spot, and the plants have a constantly changing sun and shade. This lath screen may be used for shading plants in the open ground if supported at a proper height above them. In a propagating-house, where it is necessary, as it often is, to shade cuttings, a lattice laid upon the outside of the glass answers a good purpose. The laths are sometimes tied together with strong twine, the cord answering the place of slats, and serving as a warp with which the laths are woven; the advantage of a screen of this kind is that it can be rolled up. Plants kept in windows during the summer months will, if in a sunny exposure, require some kind of a shade, and if the one provided to keep the sun from the room shuts out too much light, or excludes air as well as sun, something must be provided which will give protection during the heat of the day, and still allow sufficient light and an abundant circulation of air. Anyone with ingenuity can arrange a screen of white cotton cloth to answer the purpose. The old practice of stripping the greenhouse in summer is falling into disuse, and by a proper selection of plants and sufficient shade, it is made as attractive then as at any other season, but even for tropical plants the glass must be shaded. For a small lean-to, a screen of light canvas or muslin arranged upon the outside, so that it may be wound up on a roller when not wanted will answer, and if it be desired to keep the house as cool as possible, this should be so contrived that there will be a space of 6 inches or so between that and the glass. But upon a large house, or one with a curvilinear roof, this is not so manageable, and the usual method is to coat the glass with some material which will obstruct a part of the light. The most common method is to give the outside of the glass a coat of ordinary lime whitewash; this makes a sufficient shade, and is gradually dissolved by the rains, so that by autumn the coating is removed, or so nearly so that what remains may be readily washed off. A more pleasant effect is produced by spattering the glass with the same wash, which can be done by a dexterous use of the brush, and stippling it so as to leave the wash in numerous fine drops, like rain-drops. Others use whiting and milk for the same purpose. Whatever may be the means of effecting it, we find that in this latitude shading of some kind is required from about the 1st of May to the middle of September, by nearly all plants grown under glass. Ferns, Lycopods, Caladiums, Primulas, Fuchsias, Begonias, Gloxinias, Achimenes, Lobelias, Smilax, and plants of that character require the glass to be heavily shaded, while Roses, Carnations, Bouvardias, Poinsettias, Geraniums of all kinds, and nearly all succulent plants, do not need so much. The method of spattering the glass outside with thin whitewash, allows the shading to be light or heavy, as required. When first done, it is spattered very thinly, merely to break the strong glare of the sun, just about thick enough to half cover the surface. As the season advances, the spattering should be repeated, to increase the shade, but at no time for the plants last-mentioned do we entirely cover the glass. In England, especially for Fern-houses, Brunswick green mixed with milk is used, to give a green shade, which is thought to be best suited to these plants. The blue glass for greenhouses which was so highly lauded a few years ago, has not met with much favour, but recent experiments in glazing with ground glass, have given such results as to warrant a more careful investigation into the use of this material.

PAINTING GLASS-HOUSES.

WHITE lead, mixed with linseed oil, is the best paint for the woodwork of glass-houses. The wood should be thoroughly dry throughout when it is put on, for internal damp soon works out, and blisters and destroys the paint. The long dry period in summer is the best time to put it on, but the wood of new houses being erected now, should be well painted over once before it is brought out of the workshop, and other coats should be applied as the weather will permit. To let the wet penetrate the wood before it is painted is a sure means of starting decay, which no after attention will remedy. Few houses are improved in appearance by being painted in a great many colours. Two are generally sufficient, and these should consist of a stone colour on the wood, and some shade of blue on the iron. The most effectively painted house I have seen lately, is a very large new one, in which the colours are a very light lemon and a French grey, the former being put on the wood, and the latter on the iron. Blue is a colour much used on iron, and sometimes along the lower edges of the rafters; it and a pearl-white look well together, but the latter should only be used in conservatories and other places where the atmosphere is quite clear. In stoves, forcing pits, and similar structures, the wood-work should be painted a dark stone colour, as the filth which soon gathers about the lower parts of these houses, is not so easily seen on this shade as on a lighter one. For the same reason the outsides of all houses should be of a dark hue; near towns, stokeholes, or chimneys, the smoke soon makes the paint very black, but further than looking dirty this does no harm. The outside generally requires painting oftener than the inside. With ordinary usage the inside need not be painted oftener than every six years, whilst the outside in most cases needs re-coating every third year. Nothing is to be gained by letting the wood become bare of paint; in fact, avoiding this is the only way to make the wood last. In old-fashioned houses where the principal supports are veritable logs of timber, it is perhaps not so rapidly followed with decay and downfall, but the durability and preservation of light framed wooden structures, can only be ensured by keep them constantly well painted.

J. MUIR.

VITALITY OF SEEDS.

ALTHOUGH there is no doubt that the seeds of many plants retain their vegetative powers for a long period under certain conditions, absolute proof is still wanting to confirm the supposed germination of grains of Wheat, &c., taken from Egyptian mummy-cases and other sources. Carefully-conducted experiments by scientific men of different countries have furnished little beyond negative results. We ourselves have tried in vain to raise various seeds, ranging from fifteen to twenty-five years old, which had been more or less exposed to atmospherical influences—that is to say, they were kept in paper bags. Buried in the soil to a certain depth, it seems quite possible that some seeds would retain their vitality for an indefinate number of years. This is so far true that in some districts where the arable land has been very much infested with the Charlock, and the farmer has succeeded in nearly exterminating it, he is very careful not to plough deeper than usual, which invariably brings a quantity of fresh seed within germinating distance of the surface of the soil, and is the cause of weed increasing and spreading again with renewed vigour. Having similar facts in view, Dr. H. Hoffmann has been experimenting with soil taken from the diluvial beds of the Rhine districts. We should mention, too, that he hoped to obtain some interesting results affecting the transmutation theory, and some explanation of the peculiar distribution of certain plants found in the Middle Rhine district. The results he has published in the "Botanische Zeitung" (Nos. 42 and 43, 1875). For the purposes of the experiments, about three-quarters of a hundredweight of the Loss soil was taken out at a depth of 12 feet below the surface, when the earth was being levelled for the railway station at Monsheim, near Worms. A newly-broken spot was selected, and the tools previously cleaned with well-water. In fact, every conceivable precaution was taken throughout the experiment to prevent the intrusion of foreign seeds or spores. Notwithstanding all this care, various common Mosses, Ferns, and flowering plants sprang up in the pots, which were closely covered with bell-glasses. It is noteworthy, too, that all the species that sprang up in this way were common either in the greenhouse or its immediate vicinity, and not in the locality whence the soil was procured. A similar set of experiments was instituted with white tertiary sand, and the result was the same. And the experiment with Loss soil was repeated again. In this instance the only plant that could possibly have sprung from a seed in the long buried soil was Festuca pratensis, but this was a delicate plant, probably from a very small light seed, that might have been conveyed by the air. It will thus be seen that all these experiments gave results of a negative character. But the author has put them on record, and wisely, we think, to show the difficulties in the way of obtaining satisfactory proof in experiments of this nature. Altogether they go to strengthen the view that "Egyptian mummy Wheat" was accidentally introduced with the actual grain taken from the cases.—"Academy."

Early Mention of Guano.—The earliest mention of guano is said to be by Ulloa in his work on Peru, published after his return from that country in 1745. The next known mention of it is by Humboldt. You may be interested, therefore, in publishing the following extract from a little book which I accidentally "picked up" a few days ago. The mention of guano in it is probably the earliest use of the word in any book in the English language. The title of the book is, "The Art of Metals, &c., in Two Books, written in Spanish by Albaro Alonso Barba, Master of Art, Curate of St. Bernard's Parish, in the Imperial City of Potosi, in the Kingdom of Peru, in the West Indies, in the year 1640. Translated in the year 1669. By the R. H. Edward, Earl of Sandwich. London: Printed for S. Mearne, Stationer to the King's Most Excellent Majesty, 1674." The extract is from pp. 6, 7:—"Out of islands in the South Sea, not far from the City of Arica, they fetch earth that does the same effect as the last afore-mentioned (Britanica). It is called guano (*i.e.* dung), not because it is the dung of sea-fowls (as many would have it understood), but because of its admirable vertue in making ploughed ground fertile. It is light and spungy, and that which is brought from the island of Iqueyque is of a dark grey colour, like unto tobacco ground small. Although from other islands near Arica they get a white earth inclining to a sallow, of the same vertue. It instantly colours water whereinto it is put, as if it were the best leigh, and smells very strong. The qualities of vertues of this, and of many other simples of the new world, are a large field for ingenious persons to discourse philosophically upon, when they shall bend their minds more to the searching out of truth than riches." I may mention that Ulloa was captured by us on his voyage home from Peru, but, on his arrival in England was at once liberated and made a F.R.S.—"Athenæum."

THE FRUIT GARDEN.

DECEMBER PEARS.

The following is a condensed list of the choicest December pears, which, together with the October and November lists, will make up a thorough, and I think, reliable catalogue of autumn and winter Pears, at least so far as the three months mentioned go. If the most select are required, they may I think with confidence rely upon those marked with an asterisk. I have been engaged in the arduous task of collecting, cultivating, and proving all, or nearly all the sorts I could procure, and my collection contains many new kinds, which it will take some time yet to test properly, and so could not be included in these lists. It is my intention however, during the winter and early spring, to give you all the information I possess at present about them. The sizes, as in the former lists, are indicated by 1st, 2nd, and 3rd.

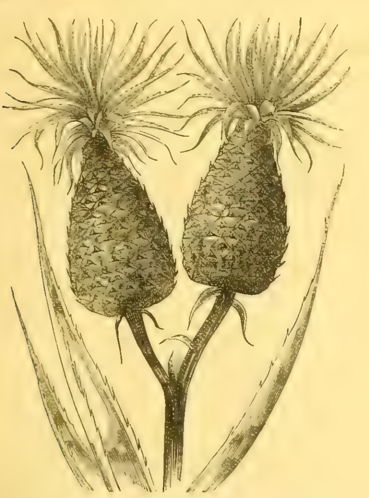
Abbé Pérez—2nd, flesh melting, very juicy, and delicately perfumed.
Adèle de St. Denis—1st, flesh melting and buttery, juice excessive, sugary, and well flavoured.
Agathe de Lescourt—2nd, melting, sugary, and aromatic.
Alexandre Lambré—described in November list, but good also for December,
*Althorp Crassane—2nd, very juicy, sugary, and highly perfumed.
Amand Bivort—1st, very melting, juicy, and exceedingly savoury.
Angelique de Rome—2nd, melting, juice excessive, rich, and sugary.
,, Leclerc—1st, melting, sugary, with a fine delicate aroma.
*Baron Deman de Lennick—2nd to 3rd, juice excessive, and delicately perfumed.
,, Inglemunster—2nd, very juicy, rich, and delicate.
Belle et Bonne de la Pierre—2nd, flesh sweet scented, sugary, and delicate.
,, *Du Figuier—1st, flesh very melting, juice excessive, and savoury.
,, Fleurusienne—2nd, half-melting, sugary, vinous, and aromatic.
*Bergamotte Esperen—2nd to 1st, very melting, very juicy, and delicious. This is, if not the best, at least one of the best winter Pears Bézi d'Esperen is often sold for it, but it does not keep so long.
,, March—2nd, melting, juicy, and good; very like Monarch in all its bearings, and has a family resemblance to most of Mr. Knight's other Pears, *i.e.*, Broom Park, Althorp Crassane, Shobdon Court, &c.; all good winter kinds.
,, Sageret—1st to 2nd, melting, delicate, with a savoury perfume.
*Bernard—2nd, melting, very juicy, very delicate, and very savoury.
Bési Incomparable—2nd melting, juicy, and very agreeable.
*Beurré Bachélier—1st, melting, juice excessive, sugary, delicate, and perfumed.
,, Bennert—2nd, melting and fine, juice excessive, sugary delicate, and perfumed
,, *Berckmans—1st, very melting, juice excessive, refreshing, and delicate.
,, *Delay—1st, melting, very juicy, sugary, vinous, and delicate.
,, Fideline—2nd, melting, juicy, sugary, and delicious.
,, de Ghelin—1st, melting, juice excessive, and agreeably perfumed.
,, *Gris d'Hiver Nouveau—2nd, melting, very juicy, aromatic, and delicate.
,, *Millet—1st, melting, very juicy, sugary, and highly perfumed.
,, Nivelles—1st, half-melting, very juicy, and delicate.
,, Phillipe Delfosse—1st, very melting, juice excessive, sugary, highly perfumed and delicate.
,, *Rance—1st, when grown against a wall, which it should always be, it is then unsurpassed as a Christmas Pear.
,, St. Marc—2nd, flesh close, melting, excessively juicy, with a fine aroma.
,, Samoyeau—3rd, melting, juicy, with a good Beurré flavour.
,, *Six—1st, one of the best of Pears from October to January.
,, Wetteren—2nd, very melting, sugary, and with a Beurré flavour.
*Bonne de Malines—2nd, juice excessive, flesh melting and perfumed.
*Bonneserre de St. Denis—1st to 2nd, melting, juicy, sugary, and well perfumed.
Brandes—3rd, very melting, sugary, and with a savoury perfume.
Brindamour—2nd, juice excessive, flesh melting, sugary, and richly perfumed.
Broom Park—2nd, half-melting, very juicy, sugary, and refreshing; very like Shobden Court, and of much the same quality.
*Cadet de Vaux—1st, melting, juice excessive, rich, and sugary, continues from December to March, and sometimes to May.
Clement Bivort—2nd, flesh fine, melting, juicy, rich, and sugary.
Colmar—1st, flesh half-melting, juice abundant, and very sweet; requires a wall to bring it to perfection.
,, *Delahaut—2nd, very juicy, half-melting, rich, and aromatic.
*Comte de Flandres—1st, extremely juicy, rich, aromatic, and exquisite.
*Comtesse d'Alost—1st to 2nd, flesh close and very melting, juice excessive, and savoury.
,, de Chambord—flesh melting, refreshing and delicate.
*Doyenné d'Alençon—2nd, very melting, very juicy, sugary and aromatic.
,, de Rouen—2nd, very melting, juice abundant and delicate.
,, Sieulle—2nd, flesh fine, half-melting, juicy, sugary, and delicate.
*Duchesse de Bordeaux—1st, melting, very juicy, refreshing, and delicate.
Emilie Bivort—2nd, very melting, delicious, and perfumed.
*Figue d'Alençon—1st to 2nd, juicy, buttery, and highly flavoured; very good. This delicious Pear requires a warm soil to bring it to perfection.
*Graslin—1st to 2nd, very melting, juice excessive, sugary, delicate, and perfumed. M. Decaisne says, that this and Beurré Superfin are the same; but they are entirely different—one ripe in October, the other in December.
Henrietta Bouvier—2nd, flesh breaking, very juicy, sugary, and acidulated.
*Josephine de Malines—2nd to 3rd, very melting and delicious; a valuable Pear.
*Monarch—2nd and 3rd, one of our most valuable winter Pears.
Louis Vilmorin—1st, flesh fine, melting, very juicy, sugary, and with a fine perfume.
Maréchal Vaillant—1st, very large, flesh half-melting, juicy, sugary, and perfumed.
Marie Benoist—2nd, melting, juice excessive, sugary, vinous, and delicately perfumed.
,, *Jalais—2nd, melting, very juicy, and delicious.
*Mariette de Millepieds—1st, flesh very fine and melting, juice excessive, sugary, acidulated, and exquisitely flavoured; in eating from December to April; a valuable winter Pear.
Orange d'Hiver—2nd, flesh half melting, and very delicious here; in some localities too astringent.
Passe Colmar—1st to 2nd, melting, juice abundant, rich, and sugary.
Petite Victorine—3rd, melting, juicy, sugary, and acidulated.
*Royal Vendée—2nd, flesh very fine and very melting, juice abundant, and very agreeable.
*Sabine—1st, flesh very melting, juicy, sugary, and very savoury.
St. Germaine Gris—2nd, flesh firm and melting, juicy, sugary, and perfumed.
Sarrasin—2nd, flesh breaking, very juicy, sugary, and acidulated.
*Suprême Coloma—1st; described in November, but it is also delicious in December.
Vauquelin—1st, flesh firm and very melting, juice very abundant, rich, and agreeable.
Vernusson—3rd to 2nd, flesh very fine and melting, juice excessive, aromatic, and delicate.
Williams d'Hiver—1st; this fine new Pear should be grown on an east or west wall, to bring out all its good qualities.
*Zephrin Louis—2nd, melting, juicy, sugary, perfumed, and savoury.

The above are all the best December Pears. There are not so many of them as of the two preceeding months, but more of them are marked with an asterisk. I have always deemed the late autumn and winter Pears to be the most delicious; they are richer and more aromatic than the early kinds, which have often nothing to recommend them but their juiciness and sweetness, although there are a good many exceptions. The shelves of my fruit room are beginning to look bare, and there are now, on them, only about eighty sorts to be examined and several of these are cooking varieties. January, February and March will nearly exhaust the whole, as the sorts which last beyond March are few and far between. J. Scott.

OLD AND NEW APPLE ORCHARDS.

The enquiry is often made—"Shall I continue my old Apple orchard, of which some of the kinds are dying, or cut the trees down and plant new ones? And shall I plant on the same ground?" We answer—keep the old orchard as long as you can get anything from it. Do not plant on the same land; but while you keep the old trees in good condition as long as practicable, have a young orchard coming on in another place. If you cut down your old trees and plant a young orchard, you will be without fruit for several years. Old orchards, well managed, will grow and bear good fruit for some twenty years longer than if entirely neglected. Apples are usually good for sixty years, and under favourable influences will often last for seventy or eighty. We have seen a tree known to be about 100 years old, but this was an exception. The oldest thrifty and bearing trees we have known, stood on the borders of gardens, where at least half the roots were in a cultivated and constantly enriched soil. Those standing neglected in Grass and weeds, at the same age, were declining, the limbs dying, and some had gone to decay. For an old orchard standing in Grass, we would not recommend unconditionally ploughing up the sod. A portion of the roots is necessarily cut or torn more or less by the plough; and while such a root-pruning (performed, of course, while the trees are dormant), may do no harm at all to a young and thrifty orchard, it might tend to check the growth of old trees, unless the mellowing of the surface might counterbalance the effect. It is safer therefore to top-dress the ground where old or decaying trees stand, with manure in autumn or winter, and to keep the Grass grazed short in summer with sheep, these animals also destroying the codling moth in the fallen fruit. Cut out all the dead limbs at the same time, and reduce the amount of the top by thinning out evenly the small shoots or branches. By thus reducing the number of shoots, those that remain will make a vigorous growth, and bear as good fruit as younger trees. We have known some which had already lost a part of their branches by old age, restored to vigour and a moderate degree of productiveness, by stimulating the roots and thinning the top. It is important, however, to continue annually the care they receive, or they will soon fall back again. All this care is not great, and is well repaid by the crops which the old trees will continue to afford while the young trees are coming forward into bearing. When it is not practicable to obtain large supplies of manure for top-dressing, it may be best to break up the Grass sod under the trees by a shallow ploughing or digging early in spring before the buds swell; and by keeping the surface clean and mellow through the summer, a small application of manure broadcast will afford important assistance. A dressing of ashes, leached or unleached, if not more than fifty bushels per acre, will be useful to most soils. If the soil in which the trees stand is deep, and the roots extend downward several feet, the digging may be done without fear of injury. If, on the contrary, the sod happens to be quite shallow, and nearly all the roots are near the surface, greater caution must be used with old trees, although with younger orchards the small amount of mutilation which the roots thus receive is overbalanced by the benefit of the cultivation.—" Cultivator."

Twin Pine-apples.—The annexed is a representation of a twin Pine, drawn by the late Lady Boyne. It was grown at Brancepeth Castle, and each of the fruits weighed nearly 4 lbs.; the kind is the Welbeck Seedling.—J. Hunter, *Lambton Castle, Durham.*



Josephine de Malines Pear.—With us this is one of the most satisfactory of winter Pears grown; although not so large as many Pears that ripen at the same time, its excellent quality fully compensates for lack of size. With us it usually produces more bloom buds on the young wood than any other variety, and commences to bear freely at an earlier age than many varieties. It succeeds well as an espalier, but deserves a wall. The great number of varieties of Pears now in cultivation, renders it a matter of some difficulty for those with limited space, to select from even the best arranged catalogues.—J. Groom.

New Varieties of Fruit.—At the recent International Exhibition at Ghent England was first with hothouse Grapes, and France obtained first honours for other kinds of fruit. MM. Baltet, pomologists at Troyes, obtained for their collection three prizes given for the most numerous, the most interesting, and newest fruits. The following are amongst the least known and the most valuable:—Peaches (late)—Lord Palmerston, Lady Palmerston, Salwey, Smock Freestone, Baltet, Teindou, Princess of Wales, Stump the World, Troyes, De Bozlen, and Belle de Toulouse. Nectarines—Albert, Lannois, and Pine-apple. Plums—Bryanstone Gage, Coe's Violette, Verdache, Jaune Tardive, Violette Galopin, Madame Nicolle, Mirabelle Tardive, Reine Claude de Wazon, Reine Claude d'Althan, and Tardive Musquée. The last-mentioned, raised by MM. Baltet, has been certificated by the Pomological Congress at Ghent. Pears—Alexandrine Mas, Antoine Delfosse, Auguste Mignard, Belle de Bolbec, Bergamotte Philippot, Bézi Incomparable, Beurré Baltet Père, Beurré Blondel, Beurré Ladé, Beurré Lebrun, Beurré Rouge, Brindamour, Comte Lelieur, Doyenné Boisnard, Duchesse d'Angoulême Bronzée, Fondante Thirriot, Fortunée Boisselot, Goodale, Hébé, Grosse d'Avril, Lucie Audusson, Madame Hutin, Madame André Leroy, Madame Loriol de Barny, Madame Grégoire, Marie Benoist, Olivier de Serres, Passe Crassane, Président Mas, British Queen, Bon Chrétien Prévost, Souvenir de Leopold I., Souvenir du Congrès, Sucrée de Montlucon, Vice-Président Delehaye, Royale Vendée, and Ellis. Apples—Amélie, Belle des Buits, Belle et Bonne de Huy, De Citron, De Soie, De Lait, Du St. Sepulcre, De Wyden, De Vigne, Fraise de Hoflinger, Joséphine Kreuter, Prince Lippe, Reinette d'Etlin, Reinette Titus, Reinette Grammont, Souvenir de Botzen, Rouleau Rouge, Posson de France, the superb Transparente de Croncels (certificated by the Congress), and the Menagère, which measured over 6 inches in diameter.—C. Baltet.

Fruit-preserving in the Open Air.—Under this title the "Moniteur Horticole Belge" describes a simple and inexpensive process of keeping Apples, taken from the " Maison Rustique." Choose a dry place naturally protected by trees, evergreens preferred; and then place the fruit in a conical heap and cover it with leaves in the proportion of twice the bulk of the leaves to one of fruit. Under these conditions the Apples in contact with the soil receive a moderate and uniform heat; the leaves keep out the cold and water, and are maintained in their place by the trees, which protect them from winds. Fruits preserved in this manner are in better condition in spring, and decidedly more fresh than those wintered in ordinary fruit-houses. It is not rare for those who dwell in the country, to find Pears or Apples concealed under leaves very well preserved, better even than others with which great care has been taken; besides, this plan comprises the essentials for keeping fruits, the most important of which is protection against atmospheric variations. Again, not only are they better preserved, but they are more fresh and firm, which is due to the almost complete absence of evaporation, and hence their tissues are swelled out full, like freshly-gathered fruit. The economy of this plan is another important consideration. It is well worth trying, with a view of prolonging the season of some of the most useful keeping sorts.

Raspberries and Blackberries from Root Cuttings.—Mr. Fuller's directions for carrying out this plan are as follows:—Dig up the plants to be propagated late in autumn, with all the roots that can be secured. Cut the roots into pieces about 2 inches long, and place them in alternate layers with sand or fine Moss in a box. Place the box in a cool cellar to prevent growth; keep the sand or Moss moderately damp. Early in spring the cuttings will have well-developed buds. Plant them out in drills in rich ground 2 inches deep. If well cultivated they will make good plants by autumn.

Evidence as to Mulching Strawberries.—Mr. A. M. Purdy gives a successful instance of mulching in the "Fruit Recorder." A grower, becoming tired of keeping his Strawberries clean, covered the whole plantation with straw early in autumn so as to hide all the plants. In spring they grew up through the straw and sent up a dense profusion of fruit stems. The season was very dry from May to July, but he obtained a large crop of fine berries which sold at 1s. per quart, yielding at the rate of 100 bushels per acre. Other plantations, not mulched, gave 20 or 25 bushels to the acre.

Newspaper Coverings and Frost.—I have had much experience of the value of newspapers as a protection from frost, in the case not only of plants, but also in that of Apples and Potatoes, and I have always found them serviceable. Laid lightly over plants that are even in height, they not only exclude frost but also drip. They should be laid on in the evening, and not be removed until after the frost is entirely thawed next morning, when they should be thoroughly dried and rendered fit for use next evening. In small unheated houses, such protections are useful in warding off moderate amounts of frost. In Apple and Potato stores such coverings need not be removed until all danger from frost is past. The value of paper coverings, however, depends greatly upon the construction of the shed or store, as, if it admits frost at every joint, it will require something more substantial than newspapers to keep fruit, at least, safe. Moreover, if Apples or Potatoes be stored on open or trellised shelves, even with a thin layer of straw on them, it will be seen that they are doubly exposed; but, if the shelves consist of stout boards set close, and a layer of straw is also used, then a good close covering of newspapers will be of great value in excluding frost.—A. D.

Grafting with Fruit-bearing wood.—I have been in the habit for a number of years of practising the different modes of grafting nearly all kinds of fruit trees, and have often found the shoots to flower the same spring. Three years ago I took a fine healthy shoot about a foot long with fruit-buds and spurs from 2 to

4 inches long from an old tree of the Magnum Bonum Plum, and put it upon a strong healthy stock. With a little extra care, it took very kindly, flowered, and set freely. I thinned the fruit down to half-a-dozen, which ripened and were quite as large as any on the parent tree. The next year it grew very strongly, and made shoots from 2 to 3 feet long, but no flowers. This year it bore a very fair crop. I may add that the tree is in a pot, and that every attention has been paid to it.—J. G. T. COCKS, in the "Gardeners' Magazine."

The Newtown Pippin at Home.—The discussion on this Apple at the late pomological meeting at Chicago, was of an interesting and somewhat conflicting character. In Virginia and North Carolina it succeeds admirably, but not on the lowlands. Hundreds of barrels are shipped from Washington. It does not bear well in Maryland. Mr. Ragan, of Indiana, stated that the green variety was the only one worth anything at the west, the yellow being worthless. Messrs. Breckenridge, of Maryland, and Overman, of Illinois could not find two varieties. Messrs. Barry, of New York, and Hovey, of Boston, thought the two were only different conditions of the same Apple. Mr. Ragan found the trees identical in the nursery and orchard growth, but the yellow variety bears a larger Apple, which does not keep well. To these opinions we may add the remarks of the late Mr. Charles Downing, who stated that "the yellow is handsomer than the green, and has a higher perfume; the flesh is rather firmer and equally high flavoured. The green is more juicy, crisp, and tender. The yellow is flatter. Both grow alike."—"Albany Cultivator."

A Famous Vineyard.—The famous Clot Vougeot is a remarkable instance of the prolonged fertility of a Vineyard with but little artificial aid. In A.D. 904, the "Clos" was a waste of about 145 English acres, of which a couple of acres were set with Vines. About this time the Benedictine monks, and afterwards the Bernardines, who came into possession of the land, began clearing. The surface blocks of stone which covered much of the ground, and were rarely found adherent to the subjacent rock, were removed and formed into piles. The soil was levelled and dug to a uniform depth of 16 inches or so, and the ground set out with Vines. By-and-by, hollows and irregularities were filled up with stones from the piles, with a light covering of soil, and planted in like manner, as were also the sites of the piles themselves. The last Vines were planted in 1234, and are still known as the "young Vines." This is no fancy sketch. The history of the ground has documentary evidence to vouch for it, and what is more, the details of the planting are still distinguished by the Vintagers. It has been said that the Vines propagate themselves. As the old rods are headed down they leave in the ground stools, which appear to be almost proof against decay. These stools form a sort of continuous carpet about 12 inches below the surface of the soil, being thickest under the Vines of 904, and thinnest under those of 1234.

PEARS IN THE NORTH-MIDLAND DISTRICT.

MR. W. INGRAM, of Belvoir, has some notes (in the "Farmer") on his experience of Pears, which may be read with profit by readers having gardens in situations not quite favourable for the growth of that fruit. Soil, climate, and local situations exert so great an influence on the growth, character, and quality of fruit crops, that the recorded experience of fruit growers in any special department, like that of Pears, for example, is not unfrequently useful even to the professional gardener, and is calculated to be of much greater service to the amateur, particularly if he is about to establish, or add to, his collection of fruit trees. Fruit manuals and nursery catalogues must necessarily contain the names of the kinds of Pears cultivated throughout the country, and without some information to guide him, a young grower may make many serious mistakes in selecting his trees, as Pears of great excellence in the south and south-west of England are quite unsuitable for the northern counties. The question as to the stock on which the Pear is worked is one that has to be considered in relation to the position the tree is to occupy. In relating my own experience of the character of the Pears I have fruited and fairly proved, I may first say that in this north-midland district we do not enjoy any special advantages of climate or soil, and our rainfall averages 24 inches. My Pear season commences by ripening on an east wall about the middle of July, a rosy-cheeked handsome little Pear called Joliemont, succeeded immediately by Doyenné d'Eté, and followed by Citron des Carmes. In August, that very useful old Pear, the Jargonelle, ripens, and a handsome, but not very remarkable Pear for quality, Poire Peche follows. Four very good Pears ripen with me in September—Beurré d'Amanlis, Williams's Bon Chrétien, Dunmore, and Fondante d'Automne. The number is much extended in October; amongst the best may be named Louise Bonne of Jersey, Beurré Hardy, Doyenné Boussoch, Flemish Beauty, Marie Louise, Beurré Superfin, Welbeck Burgundy, Gansel's Bergamot, and Urbaniste. As the winter season approaches the number of Pears that attain maturity is still further extended, and November affords amongst others that fine old Pear which has the property of keeping firm and good several weeks after perfect ripening, a quality that many of our best Pears lack most lamentably—Crassane; then follow Soldat d'Esperen, Beurré Capiaumont, Beurré Clairgeau, Beurré Bosc, British Queen, Van Mons Leon Le Clerc, Beurré d'Anjou, which are among the most noticeable this period affords. A little hardy but excellent Pear, called Aston Town, ripens early in the month, and is best grown as an orchard tree. Some of the very best Pears ripen, as they should do, about the festive season of Christmas, when other fruits become scarce, and are therefore doubly welcome. In December Winter Nélis is generally in perfection, and is one of the best Pears we possess. Conseiller de la Cour, Doyenné du Comice, Glou Morçeau, Hacon's Incomparable, Josephine de Malines, Huyshe's Prince Consort, Beurré Bachelier, afford examples calculated to grace any dessert, and please the most fastidious taste. In January Winter Nélis is still pre-eminent for high quality, and the gradual ripening of Josephine de Malines, Prince Napoleon, Jean de Witte, Knight's Monarch, Zephirin Gregoire, Passe Colmar, Orpheline d'Enghien, adequately keep up the supply, which is continued throughout the two following months by Knight's Monarch, Easter Beurré, Doyenné d'Alençon, Olivier de Serres (a capital Pear), Bergamot d'Esperen, Ne Plus Meuris, and Beurré Rance.

Rea's Mammoth Quince.—Rea's Mammoth, a sub-variety of the Orange Quince, is highly recommended as being much larger than the common variety, and more productive. The fruit is tender throughout, like an Apple, and free from the hardness and harshness of the Pear Quince. Those who have grown Rea's Mammoth for two or three years say it is so much larger and more productive than other varieties that it is destined to displace them. All varieties of Quince are very hardy. As the blossoms do not appear till June, there is never any danger of injury from late spring frosts. Quince trees may be transplanted at one, two, three, five, or even more years old, of course taking care to injure the roots as little as possible. An old tree may thus be transplanted, but the fruit should be picked off the first year and a full crop can be had the next. But young trees are so much cheaper, and come into bearing so soon, that for a large plantation they are preferable. My way has been to buy very few Quince trees, except to get a new variety, as Rea's Mammoth. They are propagated very readily from layers, and by cutting off the young shoots, leaving ten or more buds at the base, and earthing around these, at the end of the year these buds will be vigorous shoots, well rooted, and ready to plant in the orchard.—"Cultivator."

Ferments in Flowers and Fruit.—According to M. Blondeau, during the flowering of certain plants, we observe an elevation of temperature, accompanied by a disengagement of carbonic acid, which has led certain authors to say that at this part of their existence plants respire in the same manner as animals. In fact, at this period, the sugar stored up in the plant undergoes alcoholic fermentation, and the alcohol formed is burnt, and in burning produces the heat needful for reproduction. When a fruit—*i.e.*, an Apple or a Pear—has reached maturity, and after being detached from the tree is placed in a vessel of lime-water, the turbidity which appears in the water proves that a development of carbonic acid is taking place. If the fruit, which has thus lived for some time in the absence of air, is submitted to distillation, a notable quantity of alcohol may be obtained, as shown by MM. Lechartier and Bellamy in their researches on the ripening of fruits. Even the simplest vegetables—Algæ, Lichens, and Fungi—contain, during all the course of their existence, alcohol pre-formed, the combustion of which serves to maintain the heat needful for their existence.

Fruit as Food.—Fruit should be eaten as food, not as a mere pastime; it should be eaten at the table, as a portion of the regular meal; but sparingly at late meals. All cooked food impairs the power of the stomach to digest uncooked substances; therefore, so long as we are accustomed to cooked food, we must be careful in regard to the times when we eat fruits in their natural state. Hence so long as we are accustomed to cooked food, the stomach will always digest fruit in its natural state better in the early than the latter part of the day.—SYLVESTER GRAHAM.

Burying Grapes—Mr. Quinby stated to the Western New York Farmers' Club, that he buried some boxes of Concord, Catawba, and Delaware Grapes, on the 1st of December, and on being taken up the middle of the succeeding February they were found to be good, free from mould, with a perfect aroma. Much of the success of this mode of keeping would depend on the natural drainage of the soil, as well as on the previous and subsequent condition of the weather as to dryness.

TREES AND SHRUBS.

THE MAHONIAS OR PINNATE-LEAVED BERBERRIES.

By GEORGE GORDON, Author of "The Pinetum."

Whether the genus Mahonia is sufficiently distinct or not from that of Berberis is a much disputed point among botanists, who look to the formation of the flowers for the distinction, while every practical gardener can distinguish the difference between them at first sight, the Mahonias having pinnate leaves, spineless stems, and berries containing from three to seven seeds in each; the Berberries having, on the other hand, simple leaves, spiny branches, and rarely more than two seeds in each fruit. All the species of Mahonia are strictly evergreen, and form handsome shrubs at all seasons of the year, but especially in the spring when in flower, and in the autumn when furnished with their deep purple berries.

Group 1.—Natives of Japan, China, and the North of India.

The Japan Mahonia (M. japonica).—This is a robust branching shrub, from 6 to 8 feet high, with leaves from 12 to 15 inches long, thick, leathery in texture, usually with four pairs of leaflets and the usual terminal odd one; leaflets, large, broadly ovate, sessile, slightly cordate at the base, rather closely placed along the leaf-stalk, from 2½ to 3½ inches long by 2 inches broad, and with from three to four strong spiny teeth on each side. They are of a dark shining green on the upper surface, pallid beneath on the younger-leaves, but frequently tinted with purple on the older ones before they fall; the lower pair of leaflets are also much the smallest and are placed close to the base of the petiole, while the terminal one is much the largest, frequently measuring 3½ inches in length and from 2½ to 3 inches in breadth, with a very stiff, triangular, spiny point. The flowers are rather large, of a bright yellow, and are produced in April in numerous dense, terminal, upright, simple racemes, from 4 to 6 inches long, which issue from among the broad, acute-pointed, persistent scales of the terminal buds. The berries are oval or roundish, large, and deep purple, covered with a fine glaucous bloom. This kind is found both in the northern parts of China and in Japan, and is called Sasa Nanting by the Japanese. Mr. Fortune first met with it in 1848 in an old Chinese garden, in the district of Hwuychow, a place famed for its green teas, and from 100 to 150 miles north of Shanghai. It is perfectly hardy.

A Pinnate-leaved Mahonia.

Three-forked-leaved Mahonia (M. trifurca).—This kind forms a bush from 4 to 6 feet high, with leaves from 12 to 15 inches in length, thick and leathery in texture, and with from seven to nine pairs of leaflets, and an odd one. The leaflets are oblong-lanceolate, 2½ inches long and 1½ inches broad, with the lower pair much the smallest and close to the base of the petiole, and the terminal one frequently trifurcate. The other leaflets are distantly placed along the leaf-stalk, are sessile, truncate at the base, bright yellowish-green, pallid beneath, and five-nerved, and with from three to four sharp spiny teeth on each side. The flowers, which are bright yellow, and produced in numerous dense erect racemes, from 4 to 6 inches long, issue from among the scales of the terminal buds in April. The berries are oval, rather large, and deep purple, covered with a glaucous bloom. It is a native of the northern parts of China. Mr. Fortune first met with it in a cottage garden, and was informed that it was cultivated extensively in the province of Chekiang, on account of the dye which it furnished. This kind bears considerable resemblance to the Nepal variety in the greater number of its leaflets; but differs from it in its much thicker and more leathery leaflets, and in the young shoots being covered with scales of a clear reddish-purple, a colour which gives them a very marked appearance. It is quite hardy, and is sometimes named Mahonia intermedia, Bealii, and japonica intermedia. Lindley considered this kind a distinct species; but it appears to be little more than a variety of the Mahonia japonica.

Fortune's Chinese Mahonia (M. Fortunei).—This kind forms an upright shrub from 4 to 6 feet high, with several stems, which become naked when old, and with but few branchlets. The leaves are frequently 9 inches long, dark green, with a bluish tint on the upper surface, and with from three to four pairs of distinct, sessile, long, narrow leaflets, and an odd one, the three upper ones being always close together. The leaflets are narrowly lanceolate, tapering much to the point, wedge-shaped at the base, frequently 4 inches long, and half-an-inch broad, with from sixteen to eighteen distinct, straight, shallow, spiny serratures on the margins, pointing towards the apex of the leaflet. The flowers are small, light yellow, and produced in numerous closely-arranged terminal erect racemes 2½ inches long, which rise from among the brown scales of the terminal buds in the spring in England, and in the autumn in China; the berries, which are dark purple, are in terminal panicled racemes less than half the length of the flowers. It is a native of the northern parts of China, and tolerably hardy about London. Mr. Fortune found it cultivated in the Chinese gardens about Shanghai, where it is a favourite plant, and is called "Che-wang-chok," or the blue and yellow Bamboo, on account of the bluish tint of the leaves, the yellow colour of the flowers, and the naked appearance of the old stems, which somewhat resemble those of a Bamboo.

The Nepal Mahonia (M. nepalensis).—This kind forms an erect-growing shrub, from 4 to 6 feet high, with leaves from 12 to 18 inches long, and with from five to ten pairs of leaflets, and an odd one; the lower pair are much the smallest and close to the base of the petiole, the others being rather distantly placed along the leaf-stalks, and all are of a bright shining, yellowish-green colour. The leaflets are ovate, or oblong-lanceolate, about 3 inches long and 1 inch broad, cuspidate or frequently tricuspidate at the ends, gradually enlarging from the base, sessile, five-nerved, rounded or obliquely sub-cordate at the base, repandly toothed, with from five to ten strong spiny teeth on each side, and not nearly so thick and leathery in texture as the Japan kinds. The flowers are rather large, bright yellow, and produced in March and April, in numerous (sometimes twelve or fourteen from the same terminal bud) erectly-spreading, dense, simple racemes, occasionally 6 inches long, and which issue from among the brown scales of the terminal buds in fascicles. The berries are large, oval or oblong, dark purple, and covered with a fine glaucous bloom. It is a native of the mountains of northern India, particularly in Nepal and at Ootacamund on the Neilgherry range, and is said to extend as far to the eastward as the Munipore country. This kind is hardy in the neighbourhood of London, and there is a fine plant of it in the pleasure grounds at Sion House, which has stood out there unprotected and uninjured for the last twenty years. Its synonyms are Mahonia and Berberis, acanthifolia, Micca, and Leschenaulti.

Group II.—Natives of the North-western parts of North America.

The Chaffy-stemmed Mahonia (M. glumacea).—In England this kind forms a close bush from 12 to 18 inches high, but according to Torrey and Gray, the stem is so low in the wild state, that it often scarcely rises from the ground, and is at all times much shorter than the leaves. The leaves are nearly 18 inches long, erectly-spreading, pale green on the upper surface with reddish petioles, and usually with six pairs of leaflets and an odd one. Leaflets ovate, pointed, sessile, remotely spiny toothed, and with from twelve to fourteen teeth on each side. The flowers are pale yellow, larger than those of the common Holly-leaved variety, and are produced in March and April, in numerous simple, upright, spicate racemes, from 6 to 8 inches long, crowded with flowers, and rising from among the scales of the terminal buds. The berries are globular, deep blue, covered with a fine glaucous bloom and ripe in July. It is perfectly hardy and a native of North America on the western coast, in shady Pine forests at the mouth of the Columbia River, and on the Pacific coast, and derives its name from the stems being covered by the long persistent lanceolate scales of the leaf buds, which continue to clothe the stem like coarse chaff for many years. Its synonym is Mahonia nervosa.

The Creeping Mahonia (M. repens).—This kind forms a dwarf bush seldom exceeding 1 or 2 feet in height, the shoots of which consist chiefly of short unbranched suckers, and it owes its name to its great tendency to form what are called creeping roots under ground. It has leaves from 6 to 8 inches long, somewhat glaucous on both surfaces, and with from two to three pairs of leaflets and an odd one. The leaflets are rather large, roundish-ovate, not pointed, truncate at the base, entire or obscurely toothed on the edges, of a dull glaucous green, and about 2 inches long and 1½ broad, with the lower pair very distant from the base of the petiole, and the terminal one much the largest. The flowers are of a rich yellow colour, in numerous short, diffuse, fascicled-racemes, which rise from among the scales of the terminal or axillary buds in April. The berries are globular, and deep purple. It is a native of North-west America, on the east side of the Rocky Mountains at the junction of the Portage river with the Columbia, and is said to extend into New Mexico. This kind, which is considered by some botanists as only a wild form of the common Holly-leaved one, crosses freely with that kind, and has produced several varieties, all of which have the large round leaves and dull glaucous green colour of the creeping Mahonia. It is quite hardy, but one of the least ornamental.

The Common Holly-leaved Mahonia (M. Aquifolium.—This kind forms a many-stemmed bush from 4 to 8 feet high, of which there are numerous forms, which differ chiefly in the size and shape of the leaflets, but none of them are so fine as the original one first introduced by Douglas from the Rocky Mountains. The leaves are from 6 to 9 inches long, with from three to four pairs of leaflets and an odd one. The leaflets are ovate, pointed, flat, equal in size, 2½ inches long, and rather more than an inch broad, sessile and slightly rounded at the base, spiny toothed on the margins, with from six to nine serratures on each side, of a rich deep shining green colour on the upper surface, not closely placed along the leaf-stalk, and with the lower pair remote from the base of the petiole. The flowers are in erect, much crowded, short terminal racemes, of a bright yellow colour, and produced in April and May. The berries are globular and deep purple, thickly covered with a fine glaucous bloom. It is found in woods all over the North-western parts of North America, from New Albion to Nootka Sound, and is abundant along the banks of the Columbia River in rocky places, and in the Oregon territory.

Group III.—Natives of New Granada, Mexico, and California.

Hartweg's Mahonia (M. Hartwegii).—This is a beautiful shrub, from 5 to 6 feet high, with large, deep, lucid green leaves, often 18 inches in length, and with from eleven to thirteen leaflets. The leaflets are ovate-lanceolate, flat or very slightly undulated on the edges, spinosely-serrated or entire on the margins, sessile or roundly truncated at the base, closely placed along the leaf-stalks, and from 3 to 3½ inches long and 1½ inches broad. The flowers are in ramosely-panicled, elongated, loose racemes, frequently a foot in length, with alternate forked branches, having from three to fifteen flowers on each, on short pedicels, of a deep yellow colour, and produced in great profusion in April and May. The berries are globular and deep purple. It is a native of Mexico, on the Rancho de los Gallitos, a narrow valley situated on the eastern declivity of the great table-land between Zacatecas and the mining district of San Louis Potosi, also in the valley of Los Gallitos, on the ascent from San Barbara, on the road from Tamipico to San Louis Potosi, and at the foot of a bluff rock called El Contradero, between Tulo and San Barbara. It is too tender for the open border about London, and should be treated as a greenhouse or conservatory plant.

The Lance-leaved Mahonia (M. lanceolata.—This forms a handsome, erect-growing shrub, from 5 to 6 feet high, with straight, stiff, erectly-spreading leaves from 6 to 9 inches long, and with from thirteen to seventeen leaflets of a deep green colour, somewhat lucid on the upper surface; leaflets, long, narrow, lanceolate, slightly undulated on the margins, very acute pointed, sessile and wedge-shaped at the base, quite straight, rather closely placed along the leaf-stalk, from 3 to 5 inches long, and from ½ to ¾ inch broad, regularly, spinosely serrated on the edges, and with the lower pair remote from the base of the petiole. The flowers are in long, loose, branching racemes, a little shorter than the leaves, of a bright yellow colour, and produced in April and May. It is a native of Mexico, where Mr. Hartweg found it inhabiting the mountain ravines of Apulco and at El Contradero, between Tulo and San Barbara. This kind, like the last, is too tender for the open border in the neighbourhood of London, and should be treated as a greenhouse plant.

The Slender-leaved Mahonia (M. tenuifolia).—This forms a handsome shrub, from 10 to 12 feet high, with a single stem, and leaves from 9 to 12 inches long, spreading or bent downwards when fully developed, and with from four to five pairs of leaflets and an odd one; the leaflets are ovate-lanceolate, short, thin in texture, pale bright green, perfectly free from all traces of toothing on the margins, distantly placed along the leaf-stalk, from 2½ to 3 inches long, and ¾ inch broad, and with the lower pair remote from the base of the petiole. The flowers appear in simple, erect or nodding, open slender racemes, frequently a foot or more in length, naked at the base, and issuing from the terminal buds. They are on long pedicels, bright yellow, agreeably sweet-scented, and are produced in great abundance from October to December. The berries are globular, nearly black, and in drooping racemes, often a foot in length. It is a native of the warm climate of Vera Cruz and Zaquapan, in Mexico, at an elevation of not more than 3,000 feet on the eastern declivity of the snow-clad Orizaba, and is so tender that it must be regarded strictly as a greenhouse plant. Its synonym is Mahonia fraxinifolia.

The Pallid-flowered Mahonia (M. pallida).—This forms a fine shrub from 6 to 8 feet high, usually with a single stem, and rather slender leaves, from 6 to 8 inches long, and with from eleven to thirteen leaflets of a dry, hard texture. The leaflets are ovate or ovate-lanceolate, undulated, and irregularly spiny-toothed on the margins, sessile, rounded or somewhat wedge-shaped at the base, distinctly placed along the leaf-stalk, of a pale yellowish-green colour, and from 1½ to 2 inches long and 1 inch broad. The flowers are in loose, slender, open, branching racemes, 8 or 10 inches long, at first erect, but afterwards, when fully developed, nodding at the ends. The flowers have whitish sepals, small pale yellow petals, and are produced in threes at the ends of the secondary branches of the flower-stalk during the months of January and February. The berries are globular, deep purple or nearly black, and ripe in July. It is a native of Mexico, and is found at an elevation of 8,000 feet at the hot springs of Atotonilco el Grande, near Real del Monte, on the Cardonal la Najada, San Jose del Oro, and Zacualtipan, and is about as hardy as M. fascicularis. Its synonym is Mahonia Ehrenbergii.

The Slender-branched Mahonia (M. gracilis).—This forms a very pretty shrub, 5 or 6 feet high, with slender branches, and leaves from 3 to 5 inches long, having bright red petioles, and from three to five leaflets. The leaflets are ovate or ovate-lanceolate, sessile, dry, and hard in texture, slightly undulated, and denticulately spined on the margins, wedge-shaped at the base, rather distantly placed on the leaf-stalk, from 1 to $1\frac{1}{2}$ inch long and $\frac{3}{4}$ inch broad, of a bright shining green on the upper surface, somewhat three-nerved beneath, and with the lower pair remote from the base of the petioles; the flowers are rather small, deep yellow, and produced in March and April in numerous simple, sub-fasciculated, open racemes, 3 inches long with bright red pedicels; the berries are globular and deep purple. It is a native of Mexico, near the hot springs of Atotonilco el Grande, on the barren hills of Zimapan, the Cardonal Mountain, near Real del Monte, near the village of Santa Maria, and on the Vulcan de Ague, in Guatemala, at an elevation of 9,000 feet. This kind is too tender for the open border in the climate of London, but is an effective object when planted at the base of a south wall.

The Crowded-racemed Mahonia (M. fascicularis).—This kind forms a handsome, robust, many-stemmed bush, with leaves from 6 to 8 inches long, of a dull glaucous green, and with from three to five pairs of leaflets and an odd one. Leaflets, ovate-lanceolate, very rigid, wavy or somewhat twisted, sessile, rather distantly placed along the leaf-stalk, with the lowest pair near the base of the petiole, spiny-toothed on the margins, with four or five prickly teeth on each side, and of a dull glaucous green colour; the flowers are in large, terminal, erect, much crowded, and compact racemes, of a deep yellow colour, and produced in April and May; the berries are oval and deep purple. In its native state this kind is chiefly confined to the lowlands of California and North Mexico. Mr. Hartweg found it on the Gigante, the highest point of the range of mountains of Guanajuata, in Mexico, and near Monterey, in California. It is too tender for the open border near London, but makes a fine shrub for training against a conservatory wall. Its synonym is Berberis pinnata, and there is the following hybrid variety.

The Hybrid Mahonia (M. fascicularis hybrida).—This kind forms a robust many-stemmed bush, from 5 to 8 feet high, with quite the arborescent habit and general aspect of M. fascicularis. The leaves are from 6 to 8 inches long, with from four to six pairs of leaflets, and an odd one; they are also of a deeper green than those of M. fascicularis. The leaflets are ovate, pointed, and distant along the leaf-stalks, from $1\frac{1}{2}$ to 2 inches long, and about 1 inch broad, sessile, truncate, or slightly rounded at the base; a little waved, and spiny-toothed on the margins; with from eight to ten regular, coarse, angular serratures on each side, and of a bright green; a little lucid on the upper side; and much larger and thinner than those of M. fascicularis. The flowers are deep yellow, and are produced in great profusion in April and May, on short, simple, dense racemes in terminal close fascicles. Berries, globular, deep purple, and only sparingly produced in short clusters. It is perfectly hardy, and very superior to any of the forms of M. Aquifolium; it is said to be a hybrid production raised between M. repens and fascicularis in the nursery of Mr. Rivers, of Sawbridgeworth, in Hertfordshire. Its synonyms are Mahonia repens-fascicularis and M. Aquifolium-fascicularis.

The New Granada Mahonia (M. Tolumensis).—This kind forms a robust many-stemmed bush, 5 or 6 feet high, somewhat resembling M. fascicularis, but with slender bright green leaves from 8 to 10 inches long, and with from five to six pairs of leaflets and an odd one, which is sometimes the largest, and 4 inches in length; leaflets, ovate-lanceolate, acute-pointed, and distantly placed along the leaf-stalk, with the lower pair remote from the base of the petiole; they are sessile, a little rounded, or obliquely truncate at the base, thin in texture, flat, slightly undulated on the edges, and from $2\frac{1}{2}$ to 4 inches long, and from $\frac{3}{4}$ to 1 inch broad, regularly spiny toothed on the margins, with from eighteen to twenty slender sharp serratures on each side, and of a bright green, a little lucid on the upper surface; the flowers are deep yellow, and produced in racemes in April and May. It is a native of the mountains of Tolu, in New Granada, and about as hardy as M. fascicularis. Its synonym is Berberis Tolucanis.

The Narrow-leaved Mahonia (M. angustifolia).—This kind forms a neat, slender, upright shrub, from 4 to 5 feet high, with leaves from 3 to 5 inches long, and with from four to six pairs of leaflets and an odd one; the leaflets on the adult plants are oblong-lanceolate, very small, narrow, and acute-pointed, while those on young plants are much broader and less pointed; the leaflets are rigid, sessile, somewhat undulated and spiny-toothed on the margins, rounded or a little tapering to the base, nearly an inch long, and 2 or 3 lines broad, with four or five regular, sharp, spiny serratures on each side, and the lower pair of leaflets near the base of the petioles and remote from the others, which are somewhat distantly placed along the leaf-stalk, and all of a light glaucous green, with a bluish tint on the upper surface; the flowers are small, in short, dense fascicles, on rather longish pedicels, bright yellow, and produced in March and April; the berries are globular, light red, with a glaucous bloom and sweet-tasted. It is a native of New Granada, and of the mountains between Pachuca and Actopan in Mexico, and is about as hardy as M. fascicularis.

The Three-leaved Mahonia (M. trifoliata.)—This very beautiful and distinct species forms a branching shrub from 3 to 4 feet high, with leaves from 3 to $3\frac{1}{2}$ inches long, having three terminal, sessile leaflets, beautifully marbled with blue, dull green, and delicate pale veins, the slender leaf-stalks being sometimes 2 inches long; the leaflets are in threes, ovate, acute-pointed, rigid, sessile, wavy, and spiny-toothed on the margins, with from three to five coarse, sharp, angular, spiny sinuosities on each side, rounded, and a little tapering to the base, from 1 to $1\frac{1}{2}$ inches long, and $\frac{3}{4}$ inch broad, of a glaucous blue colour, marbled with dull green on the upper surface, as has just been stated, and light green beneath. The flowers are rather small, bright yellow, and produced in April and May in few-flowered axillary racemes on short peduncles. The berries are small, globular, light red, and sweet-tasted. It is a native of Mexico, where it is found covering large tracts of the high table-land near the Hacienda del Espiritu Santo, an immense plain on the road from Zacaticas to the mining district of San Louis Potosi, and is called by the inhabitants "Acrito;" the fruit, which is rather sweet-tasted, is much eaten by children. It is rather too tender for the open border about London, but makes a beautiful plant for training against a south wall.

The White Evergreen Thorn.—This plant (Cratægus Pyracantha alba) is very highly spoken as a hedge plant in "Moore's Rural." Among the many plants experimented with for hedges in the eastern states, the White Evergreen Thorn (Cratægus Pyracantha alba) is certainly the most promising. In the grounds of Messrs. Parsons, of Flushing, where it has been growing for the past fifteen years, it thrives admirably. Old specimen plants (of which there are many) standing upon the lawn form naturally a dense mass. So closely interwoven is the small Thorn-studded spray that a sparrow would find it difficult to enter or pass through. The plants bloom in June, and in autumn and winter they are covered with very showy orange-coloured berries. The Evergreen Thorn is a slow grower, seldom producing young shoots of more than 12 to 18 inches in length in one season; but the plants fill up as they progress, consequently require very little pruning, and when fully established, no ordinary animal would ever make more than one attack upon their thorny surface. This variety of Pyracantha should not be confounded with the more common sort, which has round leaves, and is not hardy. The White Evergreen Thorn has small, oblong, pointed leaves, and they remain permanently upon the plant during the coldest winters. It is propagated by cuttings and layers, and hedges should be formed with one or two-year-old plants, as older ones are not so readily transplanted, owing to their strong, deeply-penetrating roots. It is also necessary to plant in autumn or very early in spring, as the sap moves the first warm weather; and after growth has commenced there is great danger of loss in removing.

Plant Poisoning.—Numerous authenticated cases are on record in which horses and cattle have been poisoned by eating Yew leaves; horses which have eaten Acacia buds and Laurel leaves have died of violent intestinal inflammation; both Yew and Laurel are much more dangerous in the months of May and June than later, because the new shoots contain a much larger quantity of prussic acid. Rhododendrons have been known to poison goats, and the Andromeda cows.

THE KITCHEN GARDEN.

REPORT ON ONIONS GROWN AT CHISWICK.

SEED for this trial, which took place at Chiswick this year, was furnished by the following, viz.:—Messrs. Barr & Sugden, Carter & Co., Cutbush & Son, Benary (Erfurt), Nutting & Son, Sutton & Sons, Veitch & Sons, Vilmorin & Co. (Paris), Harrison & Sons, Stuart & Mein, Piccirillo, Hovey & Co. (Boston, U.S.A.), Dancer, J. Perry, A. Parsons, and R. Dean. The seed was sown on March 16th in well pulverised moderately rich soil, which had, the previous season, been well manured for Celery. The season was, on the whole, favourable for the growth of Onions, so that the trial was, so far, of a very satisfactory character. Altogether 155 samples were sown, representing ninety-eight different names, of which number twenty are here described as quite distinct. The report only extends to those varieties which have been proved to be well adapted for spring sowing and early autumn or winter use, the remainder of the Tripoli and Silver-skinned sections being again submitted for trial as autumn-sown Onions.

1. **White Spanish** [syns., Banbury (Perry), Banbury Improved, Nuneham Park, Improved Nuneham Park, Reading, Improved Reading, Nazeby Mammoth (Carter & Co.), Oxonian Prize (Nutting & Son), Cutbush's A1 (Cutbush & Sons), Portugal, Cantello's Prize (Waite, Burnell, & Co.)].—This variety is the one most generally cultivated. The plant is of free growth, the neck of medium size, and ripens off early and well. The bulbs are large, a fair-sized specimen measuring about 12 inches in circumference, and from 2 to 2½ inches in thickness. The shape is flattened, the base broad, flat, frequently a little hollowed and uneven, somewhat globular towards the stalk in the best forms. Skin pale straw, falling off readily and exposing the pale greenish-yellow outer flesh. The flesh itself is firm and solid, almost white, and of excellent quality. This variety keeps generally in good condition up to the month of March. The Banbury and Nuneham Park types were the most approved.

2. **Large Straw-coloured** (Vilmorin)—[syn., Yellow Flat (Hovey & Co.)].—This is only to be distinguished from the White Spanish by the darker colouring of the outer skins.

Yellow Lescure (Vilmorin), *Yellow Cambrai* (Vilmorin).—These were considered very spurious stocks of the large Straw-coloured.

3. **White Globe.**—Plant of free growth, forming in general a small neck; ripens off early and well. The bulbs are of medium size, from 9 to 10 inches in circumference, and about 2¾ inches in depth. The shape is somewhat globular or obovate, with a finely rounded high crown. The skin is pale straw, like the White Spanish, and it is, indeed, similar to that variety in every other respect but its more globular form. It is an excellent keeping sort, and much esteemed.

White Intermediate and Oscar (Cutbush & Sons).—These are mixed and indifferent stocks of White Globe and White Spanish.

4. **Trebons** (Vilmorin & Co., Stuart & Mein).—Plant of free growth but somewhat tender, succeeding best in a warm season. Neck somewhat gross. The bulbs are of very large size—about 13 inches in circumference, and from 3 to 3½ inches in depth. The shape is obovate, the base somewhat broad and flat, whilst the top tapers more to the stalk or neck. The skin is pale straw, and peels off readily like that of the White Spanish. The flesh is pale and rather soft and flabby, but of mild and excellent quality. This is a very large and handsome Onion for early autumn use. It does not keep well, and generally begins to shoot before Christmas. It bears a close resemblance to the imported Spanish Onions.

5. **Yellow Danvers** (Hovey & Co., Vilmorin & Co., Carter & Co.) [syn., Danvers' Yellow].—This is a very fine and distinct Onion. The plant is of free growth, the top slender, of a rather pale green colour, and with a very fine slender neck, so that it ripens off well. The bulbs are of medium, but very even and regular, size, from 10 to 11 inches in circumference, and about 2½ inches in depth. The shape is roundish-globular, very regular, with a small base and a small neck. The skin is of a dark straw colour, the outer coating peeling off freely, but not exposing the flesh, the inner coating remaining firm, giving the Onion a very neat, clean appearance. The flesh is very firm and solid throughout, and of fine quality. A splendid keeping variety.

New German (Veitch & Sons).—This bears a close resemblance to Danvers' Yellow, but scarcely appears to keep so well.

6. **Brown Globe** [syn., James's Keeping].—This is of the same character as the White Globe, but has darker or reddish-brown skins; some are pale-fleshed throughout; others, these being the darker-skinned, have a slight shading of red as an outside coating of the various layers as in the red varieties. It is an excellent keeping variety, and much esteemed. The James's Keeping of some is more flattened near the crown, forming a sort of shoulder to the stalk, and of others again it is similar to the Pear-shaped.

Magnum Bonum (A. Parsons) is a fine selection of the Brown Globe. *Brown Intermediate, Bedfordshire Champion.*—These are mixed stocks of Brown and White Globe.

7. **Pear-shaped** [syn., Pyriforme].—This is allied to the Globe section, and may be described as an elongated form of that variety. The plant is of free growth, the great majority producing very thick necks with very little bulb, so that they do not ripen off well. The true form is like that of a long Pear tapering mostly towards the stalk from 7 to 8 inches in circumference, and from 4 to 5 inches in depth or height. The skin is of a dark reddish-brown, and falls off readily. The flesh is moderately firm and solid, but it is not a very good keeping sort, and its shape does not recommend it. A good selection of this is sometimes sent out as James's Keeping.

8. **Deptford** [syns., Brown Spanish, Improved Brown Spanish, Strasburgh, Strasburgh Dutch, Pale Red Niorte, Light Red Strasburgh], —Plant of free growth and very hardy, forming a small neck, and ripening early. The bulbs are of medium size, flattened or oblate, of pretty even and regular form. The skin is of a dark reddish-brown colour. The flesh firm, solid, tinged with red. An excellent keeping variety.

9. **French Strasbourg** [syn., Pale Red St. Brieux].—This is distinct from the Deptford or English Strasburg. The bulbs are smaller, of very uneven shape, and frequently split open into several crowns. They are of a dull reddish colour. They are very inferior varieties of the Deptford class.

10. **Deep Blood Red.**—Plant of free and hardy growth. Bulbs of medium or rather small size, flattened or oblate, and generally of very even and regular form. The outer skin is of a dull red colour; the inner coating of a deep glossy red. The flesh itself is pure white, it being only the outside coating of the various layers that are coloured, and these become paler towards the centre. It is very firm and solid throughout. This is the strongest-flavoured Onion, and the latest keeper. On these accounts it is a valued variety.

Blood Red.—This is simply a paler-skinned variety of the preceding, and the most common.

11. **Wethersfield Red** (Hovey & Co., Carter & Co., Benary & Son)—[syn., Bright Red Mezières (Vilmorin)].—Plant of free and robust growth. The neck small, ripens off freely. Bulbs large, flattened or oblate, very even and regularly formed, about 12 inches in circumference and 2 in depth. The outer skin is of a light dull red colour, and peels off freely; the inner coating being light purplish, shading greatly from the crown to the base, where it is very pale. The flesh is pure white, the outer surface of the coating only being coloured. It is very firm, solid, of mild and excellent quality, and keeps well. A remarkably fine and handsome Onion from America. The finest type of Red Onion.

12. **Early Red** (Hovey & Co.).—This is a rather early red variety. The bulbs are of medium size, flat, and of a very dull red colour. The flesh is firm and solid, and of good quality. It shows a tendency to produce several crowns, which burst and spoil the bulbs.

13. **Two-bladed.**—This name is given to denote its peculiarities of only producing two blades or leaves. These form small bulbs very early in the season, and soon ripen off. A great majority, however, grow into larger bulbs, and these have the ordinary number of leaves. The true two-leaved type has small roundish bulbs about an inch in diameter. The skin is of a dull yellowish-brown colour; the flesh, greenish-white, and frequently a little coloured. They are very firm and solid, and keep well. Its small size makes it useful for pickling purposes.

14. **Teneriffe** (Benary & Son).—This greatly resembles in appearance the smaller types of the Two-bladed.

15. **Silver-skin** (Nutting & Son)—[syns., Silver-skin Pickling (Veitch), Early White Silver-skinned (Benary & Son), White Round Early Hard Dutch (Vilmorin & Co.)].—The bulbs are of medium size, roundish oblate; a great many are apt to split open. The outer skin is pure white or silvery, peeling off freely and exposing the next coating, which is white with green veinings. The flesh is pure white, exceedingly firm, and solid. Keeps remarkably well, and is useful to those who prefer very white Onions. This is quite distinct from the Paris Silver-skin, which does not keep well.

16. **Queen** [syns., New Queen, Piccirillo's New Queen].—This is a very small and very early variety of the Silver-skinned section. It forms bulbs almost as quickly as a Radish, and has rarely more than two or three leaves. They were fully grown last season by the 1st of June, about fifteen days earlier than the White Italian Tripoli, which variety, in the late trial, it most nearly resembled. Many large and later-growing examples were observed in each sample, which, if the seed was not mixed, implies a tendency to deterioration. In this, as in other respects, it exactly resembles the Nocera, as introduced from Italy about thirty years ago, and the Florence White of earlier date.

N.B.—All the section of Silver-skinned Onions, including the Queen, White Italian Tripoli, Marzajola, Nocera, Paris Silver-skin, Early White Naples, and White Lisbon, also the Giant Tripoli section, including the Giant Rocca, Red Sallow, Madeira, &c., which are found valueless as spring-sown varieties, will form the subject of a separate report when their respective merits have been tested as autumn or winter-sown Onions.

17. **Potato Onion** [syn., Underground Onion].—This is not propagated by seeds. The small bulbs are planted in the ground like Shallots, and around these a number of new bulbs are produced. The bulbs are of average size, of somewhat irregular shape. The skin reddish-brown, hanging very loosely. The flesh is tolerably firm and solid, and of fair quality. It does not keep well, but is useful for procuring an early supply.

18. **Egyptian** [syns., Egyptian Bulbiferous, Tree Onion, Garden Rocambole].—This variety when planted throws up a stem on which, instead of flowers, small bulbs are produced of about the size of small marbles, which are very excellent for pickling. It is propagated by planting these bulbules (the largest of which will bear bulbs the same season), or by the bulbs which are formed in the ground, and which have not formed stems.

19. **American Perennial Tree, or Top Onion** (Carter & Co.). —This produces small bulbules in the same manner as the Egyptian Bulbiferous, but of a smaller and inferior character. No bulbs are formed in the ground. The plant is perennial, the roots long and fibrous.

20. **Welsh.**—Of this there are two varieties, the Red and the Green. The plant is an herbaceous perennial, and forms no bulbs; the roots are long and fibrous. The green tops or leaves only are used. It may be propagated by seed or by division of the roots. A. F. BARRON.

CULTURE OF CELERY.

Good Celery is still the exception rather than the rule in the majority of small gardens. Therefore no excuse can be needful for once more adverting to its cultivation. Spring Celery for soups, planted out in September and even in October, should not be earthed up till the following spring. They must be protected during winter by a little litter or a few leaves around their stems, and earthed up in February, such Celery is seldom first-rate for cheese or salad, but is most useful in other ways, as it is found almost impossible to preserve Celery blanched before winter after the following March. It either rots or bolts, whereas the late planted crops, unblanched during winter, may continue sound till May or even June. By that time green Celery, sown in January and February in heat and brought on, will be forward enough for flavouring, while it is possible to have blanched Celery early in August, so that Celery for flavour, at least, if not for cheese, may thus be had all the year round. To ensure this succession, three or four crops of seeds should be sown in a season. The first in January, to plant out in the middle of May, to come in early in August. This crop is much given to "bolting," and should be a small one. The second in March, to plant out in June, to come in through September and October. This crop generally does well, and should be a large breadth. The third in April, to plant out in July, to come in in October, November, and December; and the last crop, early in May, to plant out through July and August, to come in through January February, and March. In addition to these a small crop may be sown at the end of May or beginning of June, and planted out in September and October, as already described, for spring Celery. In the majority of gardens two sowings only are made—one in February, for the earliest, and a second in March or April for the main crop. To have large Celery it is needful to sow pretty early to give the plants time to grow into bulk during the warm weather. For though the Celery is a hardy plant it grows but slowly, and little in a temperature under 55° or 60°. In a wild state Celery is a marsh plant, and this fact gives the key to its culture, for though we change its uses we do not change its nature by cultivation. Therefore from the time the seeds germinate till the Celery is served in salad or with cheese, or used for flavouring soup, it should not once become dry. Dryness and poverty of soil constitute the surest means of ruining Celery crops. For marshes are not only moist, but, as a rule, they are remarkably rich with decomposing vegetable matter. In such, or its equivalent in the form of rich manure, Celery luxuriates and grows into size and quality if the cultivator will allow it. For next to the two modes already named the progressive earthing up of Celery is the surest mode of ruining it. It shuts out the water from the roots, envelops the plants in a mass of earth, and retards their growth. The object of progressive earthing up is, of course, to blanch the crop, an object by no means facilitated by the process; for Celery, to be of the highest quality—white, crisp, and sweet—should be all blanched at once. It should therefore be grown first and blanched afterwards. The simplest mode of blanching is by the use of earth, though paper cylinders, drain tiles filled with ashes, and other contrivances are often used to facilitate the process and to keep the stems straight and clean during its performance. A certain amount of shade is also helpful to the growth of Celery. This is generally effected by intercropping with Peas or Scarlet Runners. Let us, however, proceed to give some specific instructions, beginning with the sowing of the seed, and finishing with the taking up of the crop. Early Celery is, of course, sown in heat. The seed vegetates slowly, and comes up best in a temperature of 60° or 65°. Even in that temperature it will often take a month or six weeks to vegetate; while in a lower temperature it takes still longer. Whether sown in heat or out of doors it should be sown in light, rich soil, lightly covered, and kept moist through all its early stages. As soon as large enough to handle the plants should be pricked out—early crops in a hot-bed under glass, and late ones on a bed of manure formed in the following manner. Some use 60-sized pots for the first crop, so that the plants shall not be at all disturbed in being finally planted out in the trenches. In that case the pots are filled with rough half-rotten dung, and surfaced with soil, one plant being placed in each pot. As soon as the roots fill the pots, the plants should either be shifted into others or finally planted out. On no account must the plants become much pot-bound, or they will run to seed. The more general practice is to make a bed of half-rotten dung about 6 inches thick on a hard bottom, and cover it with 1 inch of rich black vegetable mould. On this prick out the plants at distances of 4 or 6 inches square. Cover with glass or not, according to the season. Water and shade, if necessary, to prevent the smaller plants flagging. As soon as they get a fair hold they will make rapid progress, soon forming healthy leaves, and quickly filling their allotted spaces with a perfect network of roots. At any season after the middle of May till October, Celery may be successfully planted out. The most general mode of planting out is in trenches, at distances ranging from 2 to 6 feet, according to the width of the trench, and the mode of intercropping. The depth of the trench is also varied, the most common and convenient depth being from 12 to 18 inches, after being bottomed with at least 6 inches of good manure. A convenient width is 15 inches for a single row, 20 or 24 inches for a double line. Some also grow Celery in wide trenches and sunk beds, varying from 1 foot to 5 or 6 feet across, and plant the Celery in rows 9 to 12 inches apart, across the trenches. Of course the width of the inter-spaces will chiefly be determined by that of the trench, from 2 to 6 feet being convenient widths. The use of the trench, even though almost universal, is by no means absolutely necessary. It is a labour-saving and a moisture-conserving expedient, that is all, though it must be admitted that it is easier to water the plants in trenches than on level ground. Trenches also facilitate the operation of earthing up. Having prepared the trench by digging out the earth, and virtually doubling its depth by the simple process of forming a ridge on either side with the excavated earth, and having also richly manured the bottom, the Celery plants must be carefully removed and planted in it at distances of 9 inches, 1 foot, 18 inches, or 2 feet apart, according to the size of the varieties, the season of the year, and other considerations. The removal of the plants from the nursery bed to the growing trench is the most important step in the whole operation of Celery cultivation. The object is to transplant without giving the plants the slightest check. Each check means the risk of bolting as well as a loss of quality. Begin at the outside of the nursery bed, and move each plant with 4 or 6 inches of roots and manure intact, and place it in the trenches a trifle deeper than it was before. Before doing so, however, look round the plant and remove any suckers from its base with a sharp pointed knife. The plants should be pulled out with a small fork or the fingers. Each piece of manure will then be furnished with roots running out from its ragged edges in all directions. If these pieces are carefully planted, and the projecting roots pointed into the manure in the trenches and the plants are well watered, they will receive no check. It is well, however, if possible, to choose a dull or a showery time for the final planting out of Celery; and should dry weather ensue, frequent sprinklings and a slight shade with a few boughs will be useful. On no account must the plants be allowed to flag. From this time watering, weeding, and the careful removal of suckers will be all that are required until within a month or six weeks of the time when the Celery is wanted for use, when it will require to be blanched. Preliminary to this all suckers should be removed, and the plants might be loosely tied up with thick strands of matting. It is also good practice to top-dress at this stage with a little guano, or rotten manure, or several soakings of house-sewage, manure-water, or even clean soft water. It is of much importance that the roots should not be dry, for they will receive no more water for the season after being earthed up. Neither, however, must the opposite extreme be indulged in—nor should Celery be earthed up for a day or two after a copious watering. It greatly facilitates the process of earthing up to shave down the earth from off the sides of the ridges, and if three men can be spared for the operation, it then becomes a simple matter. One should stand over the plants and pack the fine earth firmly round them as he holds them closely together with his other hand, another at either side cuts down the earth and breaks it fine. Of course one man can manage it all, but it is much more tedious and slow. The great point is to keep the plant straight and firm, so as not to allow the earth to enter into its heart, nor get between the leaves. The entire plant may be earthed up from its base to within 6 inches of the end of its longest leaves. It is necessary to leave these leaves out to preserve the plant in health, and to prevent it rotting off from the sudden shock to its system. In a month or five or six weeks the Celery will be blanched white and be ready for use. Celery requires some careful management in taking it up and preparing it for table. Begin at one end of the trench, and dig the plants out in succession. Seize them firmly by about the middle of the stalk, remove all the outer leaves, cut off the roots in a slanting direction, and if for cheese or salad draw off the leaves close till all that is left is white as crystal, reserving, however, the best of the rejected leaves for soup. For kitchen purposes a much rougher dressing suffices. If it is desirable to keep Celery for many hours out of the ground it must by no means be dressed close or washed until wanted, as Celery soon loses its nutty flavour, when exposed in a bare state to the air. In winter, however, or in bad weather a week's supply of Celery may safely be taken up at one time and kept in a rough undressed state, stored in earth or sand. Successive crops should be all treated in the same way, with the exception of the winter and spring Celery, which is to be managed as already indicated. As to varieties of Celery almost every one has his favourite sort, and they are numerous. If Seymour's Superb Solid White and Red can be had they are still perhaps as good as any, Cole's White Perfection, Sandringham White, Veitch's Incomparable White, Matchless White, Hooley's Conqueror, Prize Red, Leicester Red, Harrison's (solid, crisp, and fine flavoured), Lang's Mammoth (one of the finest large varieties). But quality in Celery is far more a matter of culture than of sort. Liberal preparation and rapid growth without check or hindrance from seed-bed to cheese plate or salad bowl, are the chief points to bear in mind in the culture of first-rate Celery. D. T. Fish.

FARMYARD MANURE.

Discussing the subject of manures and composts, more with regard to their general use and procurableness in gardens than to their order, I cannot possibly pass over the above. Horse manure, though stronger than cow manure, is not so generally useful. For digging in among or mulching out-door crops it is excellent, but for pot plants it is not adapted either in a fresh or spent state, being rather light and a breeder of worms. In Melon or Cucumber beds worms increase at a prodigious rate, and become positively injurious; we have long discontinued using it for such purposes. It is a good manure for mixing in Vine soils, but when employed in newly-prepared turfy borders in any quantity, we have known it produce unexpected results by causing violent fermentation, which lasted for months. When it has to be used in this way, or for composts, it should be previously mixed with the soil, and allowed to lie for some time. As it comes from the stable yard, it is often in dry, musty, flakes, which should be thoroughly teased out before it is added. Its texture fits it for heavy soils, which will absorb a large quantity of it with advantage, if applied periodically; but we do not care to use it for potting composts, let the loam be ever so heavy, so long as we can get leaf-mould or peat and sand as lighteners, and any other manure. Cow manure, if less rich than that of the horse, is more lasting, and, being a cold manure, it is one of the best for light, dry soils; for Vine or Peach borders that have become partially exhausted hardly anything better can be recommended as a dressing. We could furnish instances of Vines bearing heavy and excellent crops annually for twenty years or more, the result of periodical applications of cow-dung, sometimes mixed with soil. The manure was applied fresh, being dug into the border. Some of the largest Peaches we ever saw were from trees that had been treated in a similar manner. Of course, cow manure may be applied with great advantage to mostly all garden crops, when it is procurable for such purposes; but in the garden it is usually reserved for select subjects and for pot-plants. It cannot be used fresh for the latter, but should always be laid up in a heap until it becomes black and rotten, but not too much so; it is generally fit for use when its greenness has disappeared. That which is collected from the fields is the best for horticultural purposes, being pure and free from litter. As a rule, it can be got in this form for the gathering, and a store should be laid in once a year. When rotten, it loses its tenacity and breaks up as fine as peat, in which condition only it should be used for potting. To such things as Camellias, and mostly all stove and greenhouse plants, that thrive in a mixed compost of loam and peat or leaf mould, it is acceptable in greater or less quantity, according to the habit of the plant. Liquid cow manure we do not esteem very highly, and we say so, knowing that it is often applied in this way. But the manure alone is better used in a solid state, as its value depends almost as much upon its coolness and moisture-retaining qualities as its feeding properties. J. S.

Failure of Winter Spinach.—On retentive soils the failure of Winter Spinach seems to be general this season owing to the increased rainfall. Our earliest sown bed for autumn gathering has nearly all disappeared, but the later sown crop on a south border with a considerable inclination to the sun is in good condition. A warm dry site for at least a portion of this crop is in some places a necessity. If it were not so, there is a considerable advantage in the early growth, which a warm site ensures. In the spring, when Spinach begins to bolt or run up for seed, in gathering it for use, instead of picking off the leaves in the usual way, I find it more profitable to cut off stalks and all together, picking the leaves from the stalks afterwards. When thus treated, a new and luxuriant growth starts up quickly from the crown of the roots with a less disposition to seed, and the produce is increased immensely. This treatment has more conspicuous effect upon later sown crops than such as are sown in July for autumn use.—E. H.

Soot.—We once heard an intelligent Midlothian farmer remark that the time would come when the sweeps would be glad to sweep our chimneys for the privilege of getting the soot. At present it is one of those manures which is not sufficiently appreciated. It can generally be procured in considerable quantities about houses where the chimneys are swept periodically. On such occasions it should be collected at once, and stored in old barrels or boxes, and put under cover. Soot is a safe manure for garden purposes, and yet powerful in its effects upon some crops, such as Onions, Grass, Potatoes, and root crops generally. Mixed with about a tenth of its bulk of common salt, it acts still more decidedly, and is more powerful than many dressings of farmyard manure. To pot plants it should always be given in the form of liquid manure. We have applied it in this way to almost all kinds of pot plants with the best results, always keeping a little diluted in the tanks, so that the plants get it in a weak state every time they are watered. For such purposes it certainly is a cheap stimulant, and perfectly inoffensive as regards smell. For Carrots and Turnips there is hardly anything better. Scattered liberally over the plants when just coming up, and afterwards washed in with water, it hurries them into rough leaf, and they so escape the fly. Applied to Grass lawns it improves the sward in a very short time; it should be put on in wet weather.—J. S.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Mushroom Growing and Sawdust.—Will some of your readers kindly say if sawdust used as bedding in stables and mixed with horse droppings is prejudicial or the reverse to the growth of Mushrooms.—R. R.

Forcing Mint.—Green Mint may be easily obtained now by placing a handful of roots under an inch or two of soil in the corner of a hot-bed or in a cutting box covered and watered, and put in a house where the temperature is about 60°.—M.

Good Winter Spinach in Undug Ground.—For seven years past I have always had abundance of good Spinach. My plan is to sow it the first week in August, when the early Peas come off the ground. The secret in growing Broccoli—in fact, all the Brassica tribe—is to plant in good firm land without its being dug. The Pea stakes being removed, we give the land a good hoeing and raking, draw the drills 1 foot apart, and sow the seed, treading it in; I slightly level the land with a rake afterwards.—R. G.

Coleworts in Private Gardens.—Mr. Dean wonders why gardeners do not grow these useful Greens. I think he will find that they are grown largely in private gardens. I grow half an acre of them, and find that nothing is better in the way of vegetables than good Coleworts. I am rather puzzled to hear that Peas follow Coleworts, when, as a rule, market gardeners do not grow Peas at all. Mr. Steel, a near neighbour of Mr. Dean's, is one of the very best market gardeners—perhaps he will tell us. I dare say the Editor of The Garden would not object to market growers becoming writers too. If so, we should learn a good many things.—R. Gilbert, *Burghley*.

Soot as a Manure.—Anyone using this as a manure must be careful how they apply it. Although highly beneficial to established crops in a mild or diluted form, it is of too burning a nature if applied in a raw state and in large quantities to young tender crops. I have seen rows of Peas and Beans heavily dressed with soot to keep off rats and mice, which so weakened the young plants that they never overcame the evil effects of the soot. I consider lime and soot require great care in application, or more harm than good may result.—J. Groom.

How to Cook Broccoli or Cauliflower.—To have really good Cauliflower, large quantities of manure in some shape are requisite, so much so that they become "strong" in flavour. To obviate this, they should be parboiled in the morning of the day when wanted. When parboiled, place them on a hair sieve and put them in the larder; 20 minutes before they are wanted for table, re-boil them steadily, and the strong taste will be gone.—R. G.

TOWN GARDENING.

The city gardener has to learn what to grow and what not to grow, what will thrive with him and what will not; and, therefore, he has to be more than careful in his attention to the wants of his pets, or they bid him a sad adieu. The country gardener, on the contrary, with ordinary care, can induce most plants from a temperate climate to grow in perfection. The city cultivator, especially if he takes to amateur gardening, has to fall back upon the broad-leaved and lusty Pelargonium, the Fuchsia, the Wallflower, the Ten-week Stock, and the Mignonette, among flowers; and the Aucuba, the Lawson Cypress, the Sweet Bay, the Laurustinus, the small-leaved Arbutus, among ornamental evergreen plants. True, he can manage bulbs of most sorts, such as the Hyacinth, the Tulip, the Crocus, the Snowdrop, and the Squill; but he has to struggle hard to keep up anything like an effective display. And can we wonder at it when we see multitudes of chimneys that, notwithstanding sanitary regulations, still belch out black smoke. When one gets into the suburbs, conditions improve a little; and it would be well to join together, in a co-operative way, in order to secure a bit of ground in the outside of smoky towns, where oneself and family could cultivate in perfection a few flowers in summer, and, it may be, a small kitchen garden. Therefore, let us see how this is to be effected. A garden frame will of course, be in request to nurse tender plants and seedlings from the cold blasts of March and April, and even May; but a glass protection alone is not sufficient for that purpose. For the raising of artificial heat, fermenting material is generally employed; it may be manure from the stable, or it may be leaves, or Fern, or any other matter capable of generating heat. Stable manure is best, and of that several cartloads must be obtained, to supply one of the fundamental needs of flower gardening. But, to return to town gardening; notwithstanding its acknowledged disadvantages and difficulties, the man determined to succeed may produce, not only green crops, but flowers, even in a north aspect, and under the very shadow of a gasometer. The problem is how to grow flowers in a soil of cinders and an atmosphere of smoke—flowers which, of all things, revel in sunshine, and demand it as their right. Town gardening, as at present practised, is indeed a sorry affair. Neither the scientific gardener nor the enthusiastic lover of natural beauty carries his garden with him to the town when necessity compels him to live amid smoke. Neither of them dream that city life might be vastly improved if a few flowers were associated with it. Yet the love of flowers seldom wholly dies out. In the musty courts and alleys, Wallflowers, Stocks, and Musk plants are purchased every spring, and planted, some in boxes and some in the proverbial spoutless tea-pot, in mould in which nothing can possibly thrive. Geraniums pass a torpid winter life, under such conditions, on window-sills and in dark parlours. In summer they put forth a few shoots of every tint but green, and sometimes a blossom or two, but, after a brave attempt to grow and flourish, they become affected by root-sickness, get leafless, and often die. Thousands of beautiful plants are every spring and summer brought from the nurseries round London and sold in the city to undergo an existence similar to that just described, their demise being accelerated by copious supplies of water at improper times, and none at others when really needed. In the suburbs, matters, as I have already said, improve. For shop fronts we get green iron railings, enclosing small plots of garden ground. Here, overgrown Box borderings give shelter to sooty patches of London Pride, Heart's-ease, and Nasturtiums, that rival Pumpkins in size and rankness. In spring, we have a few clumps of Primroses and Polyanthuses; and when these are gone, they are succeeded by Wallflowers, early Stocks, Sweet Williams, and double Daisies, all of which are usually purchased of some itinerant florist, who supplies them at various prices, ranging from one to ten a-penny. Forthwith, the garden breaks, as it were, suddenly into bloom. But, alas! its duration is but short. Towards midsummer, a few Geraniums may be seen, arrayed in bright scarlet; and, with these, are perhaps intermingled a few Verbenas and a blue Iris, some Marigolds, Love-lies-bleeding, Chrysanthemums, and Hollyhocks, all more or less blighted by smoke or ill-treatment; dingy Hollies, too, rise out of pyramids of stones; stiff Laurels look as if they were cast in bronze, and have scarcely grown an inch since they were planted; dilapidated Lilacs form Arcadian retreats for cats and slugs; Lime trees are every year cut so as to look like square boxes set on pedestals; and occasionally one finds on the walls a Virginian Creeper, the Ivy green, and a straggling Jasmine. These constitute the chief contents of front gardens, each of which would be a Pæstum, were it not that the Roses, hitherto unmentioned, never blossom. Nevertheless, all this might be improved, provided right means were adopted, and that, too, without exorbitant toil, or great expense. It is, indeed, one of the peculiarities of gardening that one may spend upon it just as much as one can afford, and no more, and yet have a satisfactory result

Meadowbank. James Anderson.

Root-work v. Rock-work.—Your correspondent, "W S." (see p. 543, Vol. VIII.), objects to root-work as being entirely unsuited to either Alpines or hardy Ferns. I do not think that either root-work or rock-work is absolutely essential to a garden, but I fail to see why plants that flourish in rock-gardens, should not grow equally well on properly constructed root-work. As regards hardy Ferns, I have seen clumps of Hart's-tongue quite a yard in diameter, growing by "natural selection" on old Moss and Lichen-covered tree stumps that have stood for an indefinite period in hedgerows; clumps, such as these, removed, stumps and all, to our Fernery, gave it quite a furnished and finished appearance at once, which it still retains. I cannot agree with "W. S.'s" remark that root-work should never be used except for the formation of screens to be quickly covered with climbing plants. Such hard and fast rules, without exceptions, would destroy that greatest charm of our gardens—individuality. On some of the principal points in the formation of gardens all of us are pretty well agreed, but minor details should, I think, always be left to be worked out in harmony with the surroundings of each individual place, whether it be large or small. No two gardens should reflect each other's features, as in a mirror.—J. Groom, *Henham.*

Heated Plant Cases.—Allow me to thank Mr. Boyle (see p. 531, Vol. VIII.) for his suggestions in reference to the heating of plant cases, and to express my satisfaction that he agrees with me in condemning an exclusive application of bottom-heat. I am entirely of his opinion that ventilation is a most important question in a heated case, but I believe I have provided for a sufficient circulation of air in the arrangement which I propose to adopt. The statement in my former letter that I desired to grow stove Ferns, and perhaps other plants requiring similar treatment, appears to have led Mr. Boyle to believe that I intended placing stove and greenhouse plants together, but this, I need scarcely say, was not my meaning. My idea is to have a miniature stove with a group of plants thriving under the same conditions of temperature and moisture, a plan by which I hope to be successful.—Philo-flos.

Red Lead an Effectual Protection against Birds.—No bird, rat, or mouse, will eat any vegetable substance that is well coated with red lead. I have used it for many years for all kinds of seeds that birds attack, just damping the seeds, and then stirring a little of the lead amongst them till they were quite red, and I never saw either a bird or vermin meddle with them; whereas, without it, we cannot get such things as seeds of the Brassica tribe and other vegetables through the ground; consequently its use is reduced to a system here. For Gooseberry, Currants, and fruit tree beds it is equally effective, but I find I cannot apply it through a syringe, so as to coat the buds thick enough to keep the birds off, in which way I tried it some years ago. To apply it to our bushes and trees with a brush takes more time than we can afford, and would not, I think, pay for the fruit saved. I may add that the late Mr. Robert Fish recommended its use nearly twenty years ago.—J. S. W.

Preserving Walnuts.—The complaint of your correspondent (see p. 556, Vol. VIII.), respecting the difficulty of keeping Walnuts through the winter, reminds me of two plans which I have been assured are equally efficacious—one is the Belgian or Dutch plan of never taking off the green outside until the Walnuts are required to be eaten; it is said that if laid on a dry board and turned when necessary, they will keep perfectly fresh, although the green husk will by degrees turn black. The other plan was mentioned by a lady, whose attention had been turned to the fact that if Nuts or Walnuts, laid up by the squirrels, had been forgotten—as is not unfrequently the case when those little animals have an abundant harvest, and forget to revisit all their store-houses—their Nuts are found in spring and summer to be as fresh in hollow trees and Mossy corners, where they are deposited, as on the day when they were gathered. This lady tried the experiment of putting her Walnuts out of doors, exposed to damp, though not immersed in water, and the result was her never failing to have fresh Walnuts throughout the winter.—A. Ll.

Timber and the Rights of Life-Tenants.—The "Law Journal" contains an elaborate report of the case of Honywood *v.* Honywood, which is most valuable as containing a full exposition of the law with regard to timber, delivered by the Master of the Rolls. First, then, what is timber? This is a question which must be answered partly with reference to the general law of England and partly with reference to the special customs of various localities. The general law of England is, that Oak, Ash, and Elm, are timber provided they are of the age of twenty years and upwards, and provided they are old enough to have a reasonable quantity of usable wood in them, or, as the text writers say, sufficient to make a good post. Now, then, as to the special customs of particular localities. Some trees which are not timber by the general law of England are timber by the custom of a particular county or locality. Beech is timber in some counties, Hornbeam is timber in others, and in some localities Whitethorn and Blackthorn are regarded as timber. In some localities the age when a tree is to be considered as timber differs from the twenty years fixed by the general law of England. In some places the age of twenty-four years is fixed as the proper age; in others age is disregarded, and the test is the girth of the tree. What are the rights of the tenant for life, with regard to the trees on his estate? If he be impeachable of waste (as the legal phrase is), he may not cut any timber, unless, indeed, the estate be a timber estate —*i.e.*, "an estate which is cultivated merely for the produce of saleable timber, and where the timber is cut periodically." Then the timber is regarded simply as the crop of the estate, and therefore as a matter of course, goes to the tenant for life. Now, then, what may our tenant for life, impeachable of waste, cut? The answer is this:—He may cut all that is not timber, with the following exceptions—ornamental trees, stoles of underwood, trees planted for the protection of banks, and trees which, though not already timber, only want time to become timber. These latter, *i.e.*, young trees of the nature of timber, he may cut, if they be cut in the due course of the management of the estate for the purpose of allowing the growth and development of other timber in the same wood or plantation. This, as the Master of the Rolls said, is for the improvement of the estate, not the destruction of it, and therefore cannot be regarded as waste.

The Royal Vineyard Grape.—I see that Mr. Crambe (page 538, Vol. VIII.) recommends the White Lady Downes late Grape as an excellent keeping variety for a cool Vinery. I wish to notice another rather unpopular late white Grape for a cool-house, namely, the Royal Vineyard. With me it hangs unshrivelled into April and May, and, although hard fleshed, as all very late Grapes are, its flavour is very good, and, from its fine amber colour, it makes a good contrast in the dessert with the Black Lady Downes. The Muscat and Trebbiano are higher flavoured varieties, but they want a warmer temperature and longer time to ripen well, and they do not keep so long without shrivelling.—WILLIAM TILLERY, *Welbeck Abbey.*

Ornamental Grasses (p. 539, Vol. VIII.).—It is not often that any of us can add to Mr. Niven's excellent notices of flowers, but he has made no mention of two Grasses which I rank among the most ornamental. These are Gymnothrix latifolia and Andropogon halepensis. They are both quite hardy, but in both of them the beauty is more in the foliage than the flowers, which may account for their omission in Mr. Niven's list. The Gymnothrix is a grand Grass, with wide, deep green leaves, and a compact habit. Here it grows over 6 feet in height. The Andropogon is of a looser habit, with long, narrow, leaves, each with a white stripe in the middle. I am surprised at hearing that Pennisetum longistylum is too tender for our winter. Here it is quite hardy, and is one of the best of the low Grasses. Mr. Niven does not remember ever seeing any record of the blooming of Arundo Donax. He will find it thus recorded in the "Hortus Collinsonianus:"—"Arundo Donax in flower, September 15, 1762, the first time I ever saw it; but this very long, hot, dry, summer has made many exotics flower. . . . . It bears a handsome tassel of flowers."—HENRY N. ELLACOMBE, *Bitton Vicarage.*

The Phyteumas.—The Phyteumas are the glory of Switzerland. The rarer species are chiefly scattered over the Tyrol and the Grisons. During my many visits to Switzerland, I have gathered nearly all the Phyteumas, and seen them growing in their own wild homes. During a recent visit to the Val de Fain, among the Bernina Mountains, I met with a strange form of P. humile, with long grassy leaves and bracts overtopping the heads of flowers. These bracts were rigid and finely denticulate. Moreover, they were furnished with purple processes at the base. Sieber, from its grassy foliage, named it graminifolium. Koch speaks of this very variety in the Val de Fain as P. humile purpureum, in consequence of the purple processes at the base of the bracts. This species and its variety grow side by side, wedged in the crevices of the calcareous rocks, high up the mountains. This species was in full blue flower—the variety in backward bud. I gathered fully half a dozen plants of the grassy long leaved variety. The true P. humile was not uncommon. I have gathered P. humile in various parts of Switzerland, and also P. pauciflorum, but the long-leaved variety only in the Val de Fain.—PETER INCHBALD, *Hovingham Lodge, York.*

Do Christmas Roses Seed (see p. 535, Vol. VIII.) ?—It appears that Mr. Ellacombe is of opinion that the Christmas Rose can re-produce itself from seed—a fact concerning which Miss Hope replies that Bitton is an exceptional place, and that is true, as all must admit, who have been fortunate enough to visit it, but certainly not as regards the seeding of the Christmas Rose. It is now ten years since I purchased three plants of H. niger, and at the end of two seasons one of these had grown so large that I determined to cut it up, which division gave me twenty-five plants. This was done just before the young leaves made their appearance, or at the end of the blooming season, which is by far the best time to divide Hellebores, as if well looked after for a short time they soon grow on, and do not remain dormant for an indefinite period. These twenty-five plants were put into a bed in the kitchen garden, and at the end of two years I observed in one corner a batch of seedlings which appeared to be small Hellebores, but to make certain I allowed them to grow on until the autumn, by which time they had attained the height of 6 inches, when no doubt could be entertained about their being seedlings from the Christmas Rose. I am therefore convinced that in some seasons, under certain conditions, not at present perhaps accurately known, this plant does seed, although apparently the fact is still a matter of doubt with many. I now much regret that I did not bloom these seedlings, as probably they would have shown some variations from the original, and consequently might have been valuable. I have tried to seed H. maximus, at present without success, but two years since I used its pollen to hydridise H. colchicum, and from this I have a small batch of seedlings, which, judging by the foliage, show that the cross has been effectual.—BERKS.

An American Fruit Car.—A fruit car is being built at San Francisco, says the "Boston Advertiser," for the transportation of fruit from that city to Chicago. It is provided with a fan-blower, driven by one of the car-axles, by means of which the air is driven through ice, which reduces it to a low temperature, and then distributes it among the fruit boxes through a large perforated pipe laid along the bottom of the car. After the cool air has passed among the fruit it returns to the blower, and is again forced through the apparatus. By this means the atmosphere of the car is kept at the uniform temperature of 40° Fahr. If the experiment succeeds, extensive shipments of Grapes and other fruits will be made to Chicago and other cities.

NOTES AND QUESTIONS—VARIOUS.

Schizostylis coccinea in Derbyshire.—This pretty border plant was in bloom out of doors in Derbyshire during the snow, and is still flowering freely. Crocus serotinus was also in bloom amid the snow.—M. S. L.

Drying Leaves.—I am about to make a collection of leaves of different plants. Can you inform me what is the best way to dry them, so as to retain, as nearly as possible, their natural colours and forms?—HERBERT. [Good instructions for drying both leaves and flowers will be found at page 196 of the second volume of THE GARDEN, and also at page 242 of our fourth volume.]

The Flavour of Fruit.—There can be no doubt, and a trial will prove it, that the flavour of fruit is much more delicate under a warm temperature than a cold one. Claret and Madeira should be milk warm or nearly so, to bring out their delicate flavour and bouquet. So with fruit: but we generally want fruit cooling to the palate. No one, for instance, would prefer a rich Melon warm from the frame to one cooled down and refreshing.—W. N.

Physianthus albens.—In the account of the gardens at Battle Abbey (see p. 546, Vol. VIII.) this plant is mentioned as fruiting well out of doors. Here it fruited under similar circumstances some years ago, and an account of it, with a figure of its singular fruit was given in the "Gardeners' Chronicle," December 16th, 1865. This particular plant has since been killed by frost, but we have again some plants of it growing out-of-doors.—D. UPHILL, *Moreton, Dorchester.*

Fruit Trees on North Walls.—In addition to the fruits enumerated as suitable for north walls by Mr. Saul (p. 538, Vol. VIII), allow me to add that many of the best of the early ripening autumn Pears are grown here on that aspect, and generally do well. Amongst these are Jargonelle, Williams's Bon Chrétien, Thompson's, Louise Bonne of Jersey, Fondante d'Automue, Marie Louise, and others. The last named is better here from a north wall than any other aspect. That fine Pear, Pitmaston Duchess, would undoubtedly do well in such a situation —W. COX, *Madresfield Court.*

Zonal Pelargoniums in Winter.—No one ever wrote an article with more truth in it than that by Dr. Denny on Zonal Pelargoniums flowering in winter. Here now we have them full of brilliant flowers, and fine bold trusses in many colours. The simplicity of their culture makes them all the more valuable. Struck in small pots in July, shifted into 48-sized pots when rooted, and kept in a succession Pine-stove at a temperature of from 55° to 60°, they thrive and flower perfectly.—R. GILBERT, *Burghley.*

The Moon Creeper.—The chief recommendation belonging to this flower is its perfume, which is the sweetest and most delicate of any with which I am acquainted. Some nine or ten years ago, Mr. Vair used to cultivate this plant at Dangstein; and most probably does so still. The rule, there, was to cut a single bloom, about 8 or 9 o'clock in the evening, and place it in a glass of water in the drawing-room, which was soon filled with the most delicate perfume.—H. ELLIOTT.

Tom Put Apple.—At p. 528, Vol. VIII., Mr. Scott informs us that this excellent Apple was raised by a Somersetshire clergyman of that name. It would be interesting to know at what date it made its appearance. There is a tree here bearing that name, which I think is the one Mr. Scott describes. This tree cannot be less than fifty years old and probably much more; nevertheless it bears regularly good crops of fruit, and it is certainly remarkable that so excellent an Apple should not have become better known than it is.—D. UPHILL, *Moreton, Dorchester.*

—— IT is said that this Apple seems to be very little known, but in these parts it is very common, and few orchards are without it. Its special value is as an early kitchen Apple, following the Codlins. It is also a good cider Apple, but it is not a good keeper.—HENRY N. ELLACOMBE, *Bitton Vicarage.*

London Churchyard Gardens.—In the remarks on planting these (see p. 513, Vol. VIII.) Yews were inadvertently printed for Yuccas—Yuccas thriving remarkably well in London, whereas Yews share the fate of all other evergreens.

No. 216.] SATURDAY, JAN. 8, 1876. [Vol. IX.

> "This is an art
> Which does mend nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

STORAGE AND SPRING PROPAGATION OF BEDDING PLANTS.

THE constitution and habit of bedding plants differ so much, even among varieties of the same species, that, to be successful in keeping them through the winter and propagating them in spring without losing an undue per-centage requires some care and not a little experience. Hence the losses one so frequently hears of among anxious stock-holders, and hence, also, the immense trade still done by nurserymen, even in the commoner kinds of bedding plants, as, for instance, some kinds of Pelargoniums, Calceolarias, and especially Verbenas, of which some make a speciality, propagating them successfully in thousands every spring, and sending them by post to customers. The winter storage of the plants, whether young or old, or whether they are kept for furnishing cuttings or for planting, is an important matter. Pelargoniums being the staple article for furnishing beds deserve notice first. Like Grapes, they are more or less apt to go off by damping, according to the soil and locality, or according to age and variety—that is, supposing them to be wintered in the usual cool pits or houses, with just a little heat to keep out frost or excessive damp. Autumn-struck cuttings keep better than old plants that have been lifted late in the year and potted; but everything depends on the way the latter are managed. We find, always, that lifted Pelargoniums of any kind are most apt to die off when they are cut down at potting time; or if they have their branches shortened by the knife, unless nursed attentively for awhile, they are sure to die back from the cut parts; the only way to save them, when so treated, is to keep them growing for awhile in a brisk heat. The best plan, however, is not to shorten the shoots at all, but only to thin them out, leaving those that are left entire. This makes long-legged plants in spring; but, in bedding-out, they can be pegged down, and they come in early—even a long time before planting out—and afford plenty of cut flowers. They also yield splendid cuttings in March and April. Those of the Tom Thumb section resist cold and damp best; while variegated sorts, and, notably, kinds like Flower of the Day, Alma, Golden Chain, and the tricolors, suffer soonest. The destructive agents are always cold and damp; and, notwithstanding attention to ventilation, and picking off decayed leaves, the shoots will continue to die back, if the temperature is low—say under 45° or 48° for any length of time together,—simply because the vitality gets low; and nothing checks decay sooner, or more effectually, than a rise of temperature, just sufficient to excite growth. If the plants have been touched with frost before lifting, they are more difficult to keep than if they had been cut down to stumps. A very sensitive yellow Zonal variety, named Beauty, which is an excellent bedding kind, but a difficult plant to winter successfully, would have been entirely lost to us this season, had the plants not been forced to break afresh when potted late in November. As it was, all shoots died back till they were met by the returning vitality, when decay was arrested just where the buds broke first. It is a kind we prefer to propagate in spring. In kinds having coloured leaves good foliage is everything, as we find spring-struck cuttings grow most luxuriantly and flower the least. We have seen enquiries lately as to the propriety of storing Pelargoniums in cellars during the winter. This we have seen tried on a large scale, and can state, that though a percentage will be saved, many will perish. When this plan is adopted, lifting the plants should be deferred till the last moment, but they should not get touched by frost, nor must their shoots be shortened. They should, after being cleaned, be set upright with their roots in dry soil, or they may be potted and set closely together, and they should not be watered during the winter, there being little or no demand upon the roots for moisture, the only object being to keep the plants alive till spring. Once or twice during the winter they should be gone over and have the decayed foliage picked off, and by February, if practicable, the plants should be removed, potted, and started in a gentle heat. Most likely the shoots of those which survive will be much shrivelled, but they will soon recover under the influence of heat and light. It is not essential that the cellar should be light, but it should be dry. Cellaring is a plan not to be recommended, however, with Pelargoniums when the preservation of the plants is of importance. It is much better to lay the plants in by the heels in spare corners or shelves in the Vineries or Peach-houses, or other cool structures, where the chances of keeping them are much greater. The wintering of miscellaneous bedding stock depends upon the habits of the different subjects; Ageratums, Verbenas, Centaureas, Gazanias, Heliotropes, Petunias, Salvias, Alyssums, Lobelias, and plants of a similar description, if rooted and established at the proper time in autumn, will remain healthy and vigorous in a still dry atmosphere of 40° or 45°, if they are not shaded or kept too far from the light. None of these plants should be encouraged to grow in the least until about three weeks or a month before cuttings are wanted from them, and, as it is not desirable to propagate such stock till about the beginning of March, their growth need not be pushed till February. Plants which have been well rested during winter always yield the best cuttings, and the young tops never fail to strike freely with ordinary care, whereas plants that have been kept moving in a sickly atmosphere during the winter produce very uncertain results. Fuchsias potted and not watered will keep in a dry shed or cellar as well as most plants till they have to be started in spring. Alternantheras, Amarantus, Iresine, Coleus, Tropæolums, and all the tenderer kinds of summer bedders require comfortable quarters in winter, or they will lose their foliage and otherwise suffer. Coleus, Iresine, and Tropæolum are particularly sensitive, especially the last-named, which will almost to a certainty go off if wintered in a cool house. It should be kept dry at the root, and just moving as regards growth. A dry warm shelf near the light ends is best. Calceolarias should, of course, never feel fire heat. Cuttings dibbled in early in November, in a shallow light frame, never fail to strike, and seldom damp off if they are not shifted too much in mild weather. They cannot stand both darkness and damp; but, when hard frozen, they will remain covered up with litter for a month or more without danger. This we have proved over and over again. When the temperature rises again, it is only necessary to thaw the plants before uncovering them; and this is done by watering them with cold water from the open tank; as soon as the leaves feel soft, and the soil about the roots seems quite thawed, they should be uncovered. We have often heard of serious losses through the plants being exposed to sunshine, while still frozen; and we once lost a quantity through an inexperienced workman thawing them with water from a hot-house tank. In a frame of Calceolaria cuttings here, which are dibbled in so thickly as to touch each other, and which have passed through irregular and severe weather up till this date, we do not observe a single decayed leaf. Slips of Violas, put in during autumn, may be treated like Calceolarias; but they are hardy enough, and are benefited by nothing so much as light and free ventilation. Hollyhocks and Carnations only require protection from severe frosts and damp, and are often covered with wooden shutters, which are removed or tilted up daily, according to the weather. Succulents of the Echeveria class and other bedding kinds, not hardy, require a dry temperature of 45° and little or no water at the roots. E. secunda glauca sometimes stands the winter out-doors in dry situations, but it is very unsafe to trust stock of it out of doors after November. We always take the plants up and set them thickly together on a dry tank behind a north wall, and lay a few old lights over them in severe weather, and sometimes a little straw. As regards propagation, all bedding plants may be increased most freely in spring, or between February and May, by means of cuttings. It is desirable, however, to propagate some kinds in autumn—Pelargoniums, for instance, that are wanted to flower freely—as spring-struck plants grow too luxuriantly; but those which are grown for their foliage may with advantage be struck in quantities in spring. Indeed, where the general stock is small, it may be recruited easily up till the time of planting out. Gazania splendens is a plant which is much better propagated in autumn, and merely potted off in spring, as plants struck later than the beginning of February are late in flowering, and to take the tops off autumn-struck stock at that time is effecting a useless exchange. Lobelias, for bedding purposes, are very commonly raised from seed, but seedlings are irregular in their habit and colour, and far inferior to plants from cuttings. A few old plants of the best habited seedlings lifted, partially cut down, potted in August, and kept in a cool house during the winter, will yield fine cuttings in March, and every shoot will strike freely in the hot-bed; after that they should be hardened off and pricked out in a cool frame, from which they will lift well with good balls at planting time. Verbena cuttings, if furnished with healthy foliage, strike with marvellous rapidity and freedom in spring, and every piece with a leaf attached will make a plant. Other bedding plants already named also all strike most freely; and one thing, which is not generally known, is, that the latest struck plants generally grow best after being planted out. For this reason gardeners generally try to secure a good quantity of healthy stock plants, so as to have one or two good batches of cuttings only, which they seldom take off till March and April. We frequently find that the last plants which are just transferred to the beds from the cutting-pots grow away most freely. The great point in striking cuttings, and in nursing the plants afterwards when they are potted or boxed off, is to avoid coddling. A bottom-heat of 75° or 80° and a top-heat of from 65° minimum to 80° maximum should never be exceeded in the cutting-pit, and when transplanted and placed in the store-frames an atmospheric temperature 5° lower than the above will be suitable—always keeping it genial by judicious ventilation and watering. Lobelias from seed should never be sown later than the 1st of February, nor subjected to a temperature higher than from 60° to 75°, night and day, till they are pricked out. Verbena venosa should be sown at the same time and treated in the same way. The Humea elegans must be sown early in the autumn previous to being planted out and potted on; and so also should the Centaureas, but we have had good beds of these from plants sown at the same time as Lobelias. In the above remarks I have spoken of the commonest bedding plants chiefly, and such as most people grow and want to know most about. Of sub-tropical plants we may speak hereafter. J. S.

Ixoras and their Culture.—Will Mr. Baines kindly name the three best Ixoras, the proper time to take cuttings of Ixoras in general, and also furnish me with a few hints as to their culture; saying whether or not they would succeed in a stove without being plunged, as I have no bed for that purpose?—H. [Several fine varieties of Ixora have come into cultivation comparatively recently, but the worst feature in connection with them is their great similarity, both as to colour of flower and general habit. The old I. coccinea is not only the best Ixora, but also the best stove plant in existence; yet few grow it well. I. Williamsii, is a fine kind and so is I. amboynensis, and I. Colei and I. salicifolia are both distinct, but they grow badly; consequently, I should advise "H." to obtain I. coccinea, I. Williamsii, and I. amboynensis. Ixoras strike readily at all times of the year when half-ripened shoots can be obtained, but early in the spring is the best time. All of them succeed best in good fibrous peat, to which has been added a moderate sprinkling of sand. To grow them well they require as much heat as any plant in existence during the spring and summer months, while in the winter they should not even at night be kept lower than 65°. Never let them get dry at the roots or allow the atmosphere to become too dry. An essential point is never to allow them to become over-run with mealy bug or scale. For these last dozen years I have never plunged either Ixoras or any other plants, although I have always had in the house a good tan bed. Where plants have top-heat enough, they are better not plunged.—T. BAINES.]

Water at the Roots of Vines.—Mr. Henry Wood, of West Chester County, has furnished us ("Moore's Rural") with an account of an interesting experiment in Grape culture, showing the importance of a dry bottom for the roots. He had a small Vineyard for a family supply, placed on the slope of a hill. The trellis extended in a horizontal direction, and the ridges formed in cultivation, as a consequence, prevented the free escape down the hill of the water from rains. The fruit was poor, imperfectly developed, badly ripened, and more or less mildewed. After some years, the trellis was altered, so as to extend directly down the slope. The furrows, in cultivation, facilitated the escape of the water from the soil, and the fruit then became well grown, plump and excellent.

NOTES OF THE WEEK.

—— MR. WARE, of the Hale Farm Nurseries, sends us a noble specimen of the Christmas Rose, with some fifty large fully-expanded flowers on it, and many more in the bud stage. The flowers stand well above the foliage, forming a great white mass, surrounded by ample and graceful leaves. This, with many others like it, grew in the open air. Good flowers of the Christmas Rose have recently been selling in Covent Garden at half-a-crown a dozen.

—— THE "Gartenflora," of November last, contains a coloured illustration of the double red Rosa rugosa, a form which has been obtained in the gardens at St. Petersburgh.

—— THE Myrtle-leaved Orange is now very ornamental in the Royal Exotic Nursery at Chelsea, bushy little plants of it, from 15 inches to 2 feet in height, being laden with fruit, some of the usual rich orange colour and others green. This mixture of colours, in our opinion, adds considerably to the attractiveness of this distinct and truly useful variety as a decorative plant for the greenhouse, conservatory, and even for the window of a warm sitting-room during the winter months.

—— A VERY distinct and probably new Eucharis is now in flower in Mr. W. Bull's nursery, in the King's Road, Chelsea. Its scapes are rather more slender than those of E. amazonica, and the flowers are far more elegant in outline than those of that variety, the segments and tube being more slender in every way, and while they hang in clusters of from five to seven on the apex of the scapes, the segments are gently reflexed and of ivory whiteness. The leaves are broadly lance-shaped, and of a bright green colour, not broadly ovate as in E. amazonica.

—— AMONG the most noticeable of the imported fruits brought to Covent Garden Market during the past week are some splendid samples of Smooth Cayenne Pines, perfectly fresh, ripe, and well flavoured, and varying in weight from three to seven pounds. These are in every way equal to home-grown fruit, and they can be imported and sold more cheaply than they can be grown in our comparatively cold and sunless climate. No fewer than 800 of them were sold by auction on one day last week. Shaddocks are also plentiful, some of the specimens being fully 9 inches in diameter.

—— AMONG the many beautiful Orchids now in bloom in Messrs. Veitch's nursery, at Chelsea, the following are worthy of special remark:—Masdevallia Tovarensis, 15 inches in diameter, and furnished with twenty-eight spikes, on which there are in all seventy fully expanded flowers and buds. The flowers are of snowy whiteness, and it is difficult to imagine a more beautiful object than this plant is, especially when contrasted with some of the brighter coloured kinds. Sophronitis grandiflora is bearing twelve fully open flowers, each having broad petals of the most vivid orange-scarlet imaginable. A fine variety of Pescatore's Odontoglot, with pure white-petalled flowers, the lip richly blotched with purple at the base and round the margin, is bearing twelve flowers. O. Andersonianum has a graceful spike of fourteen flowers, as has also a very fine form of O. Hallii. The clear yellow Oncidium cheirophorum is furnished with nine gracefully arching spikes, and Barkeria Lindleyana Centeriæ is also flowering freely, its rosy-lilac flowers being very distinct from all other kinds, and so rich and lucid as to remind one of stained glass. Angræcum bilobum bears a noble pendent spike of twenty pure white flowers, a number which we believe has never been exceeded. Calanthe Veitchii and Lælia anceps are also just now very attractive, as is likewise a plant of Phalænopsis Lobbi.

—— THE directors of the Westminster Aquarium have placed the whole of the arrangements for their floral and fruit exhibitions in the hands of Mr. John Wills, of the Royal Exotic Nursery, Onslow Square, South Kensington. Mr. Wills has to frame the schedule of prizes and arrange the shows, &c.

—— THE Royal Botanic Society has published its exhibition arrangements for 1876. They are—first, an exhibition of spring flowers, on March 29th and April 26th; then an exhibition of Clematis, from Messrs. Jackman, of Woking, from May 1st to May 23rd; after which commence the summer exhibitions of plants, on Wednesday, May 24th and June 21st. A special evening fête will take place on Wednesday, July 5th.

—— THE annual meeting of the committee of the Horticultural Club was held at the club house, 3, Adelphi Terrace, on Wednesday last. Dr. Henry Bennett, of Weybridge and Mentone, Captain Chist, of Beechhurst Lodge, Westerham, and Dr. Denny, of Stoke Newington, were elected members of committee in the room of the three retiring members. It was determined to hold discussion meetings during the winter months. The first will be held on Wednesday the 19th inst., the subject being "the principles and practice of pruning." Three new members were elected.

NEW VARIETIES OF THE PRIMROSE.

Mr. Richard Dean, in a paper read at Westerham, tells us of some of the new Primroses. A few years ago I came into possession of a so-called species of Primrose known as Primula altaica, having all the characteristics of the common Primrose, but bearing large pale mauve flowers. I have reason to believe this is not a true species, but simply the old common single lilac Primrose of our gardens. Almost at the same time I found in an old garden on the south-west coast of England a remarkable common single Primrose, having rich bright maroon-crimson flowers of fine form and a deep golden centre. I brought it home to London, propogated it, and eventually distributed it under the name of Primula vulgaris auriculæflora, because the flowers resembled a good Alpine Auricula. In this variety I found the very thing to yield high-coloured Primroses; but while I despaired of getting anything better in its own way, I thought I might perhaps get mauve, violet, and purple tints, which would prove very acceptable. With this view, I crossed the two above-named kinds, and got some fine seedlings, having intermediate tints, and especially in the way of purple and violet hues. Some of the seedlings were of a pale colour approaching lavender; others had rosy tints, and by crossing these in various directions I at last got a progeny, yielding to my delight, pure white and yellow flowers. I cannot do better than give a list of the new varieties of seedling Primroses I have put into circulation, with their descriptions:

Crimson Banner.—Very deep maroon-crimson (the darkest of all), rich golden centre.

Gem of Roses.—Pale rose-magenta, with golden centre slightly blotched with orange.

Lilacina.—Pale lilac, with yellow centre rayed with deep orange.

Queen of Violets.—Clear puce violet, with striking eye.

Rosy Morn.—A fine hue of rose-crimson flushed with magenta, orange centre.

Sulphurata.—Clear sulphur, with orange centre; flowers large, circular.

Sunrise.—Fiery red-maroon, with showy deep golden centre.

Violacea.—Bright rose-violet, with golden centre, large, very free.

Primula vulgaris auriculæflora.—A rich maroon-crimson primrose, with a showy orange eye.

Mauve Queen.—Rose-mauve, with bright orange centre.

Splendour.—Large and finely-formed rose-crimson flowers, centre golden-yellow, and profuse of bloom.

Queen of Yellows.—Yellow, with deep orange centre; profuse of bloom, and very early.

I particularly recommend these for the rock-garden and the choice border, where they can be carefully tended, and be allowed to establish themselves. They can also be cultivated in pots for blooming in a cold greenhouse or conservatory during autumn and spring, as well established plants in pots will throw up flowers in autumn from the growth of the previous summer, and again in spring from the growth that takes place in February and March. The plants that flowered well in pots should be re-potted soon after they have done blooming, using a soil made up of fibrous yellow loam and leaf mould in equal parts, and some charcoal broken to the size of split Peas. At the time of re-potting, any rooted side-shoots should be taken off, in order to obtain increase of any variety. When re-potting, the long tap-root should be cut away to within an inch or so of the leaves; then plant deeply and firmly in the soil, as, when the lowermost leaves decay in the order of Nature, roots are given forth at the points where the leaves grew. This shows the importance of occasional top-dressings with rich soil. When re-potted the pots should be plunged in a bed of coal-ashes, Cocoa-nut fibre, &c., up to their rims, under a south or west wall, where they can have the sun for a few hours during the morning. Worms and slugs are apt to prove troublesome, and a little attention is required to guard against their ravages. The plants require to be kept moist during summer, and under such condttions they cannot but do well. I have several plants in pots that have been treated in this way, which are now throwing up their flowers, and are very attractive objects in my cool greenhouse. They want plenty of air on all favourable occasions; and water to keep them fairly moist about the roots.

Potting-off Cuttings.—Many plants acquire a weakly habit from being confined too long in the cutting-pots. The moment the roots have pushed from the roughly callused wound is the best time to pot, and start each plant on its separate existence. The importance of this is too often overlooked, and valuable time is lost. When the roots are long and matted together, it is impossible to disentangle them without the plants receiving a severe check. If potted off when the roots are not more than a quarter-of-an-inch long, there will be very little disturbance of growth. The saving in time, if much potting has to be done, will be considerable. It may not be always possible to carry out this plan exactly at the right moment, but it is well to bear it in mind as the right practice.—E. Hobday.

Iris reticulata Forced.—It may not be generally known that this beautiful Iris may be forced with the greatest ease to flower now. My practice is to lift batches of it, every second year, in July, when the tops have died down, to pick out the largest bulbs for pot culture, and to return the others to the open border, in which they are planted in fresh soil. After keeping the selected bulbs until the middle of August, I then plant five bulbs in a 48-sized pot and plunge them in ashes in a cold frame. Thus treated, by October they will have pushed about 1 inch through the soil, when they may be introduced into a temperature of from 45° to 50°, in fact, treated like a first batch of forced Roses. The gentle forcing to which they are subjected brings them into flower by New Year's day, and they are charming flowers for a lady's boudoir, one or two blooms being sufficient to scent a whole room with delicate perfume. This Iris is a great favourite here, either forced or in the open border. Its colour—rich violet, with bright yellow throat—associated with that of Roman Hyacinths and Poinsettias, has a fine effect at this season of the year. To the Rev. J. G. Nelson, of Aldborough, I am indebted for my first stock of bulbs of this Iris, given me eight years ago, and since then they have rapidly increased. To see his stock of this Iris in flower, about the last week in March, in company with a rare collection of Crocuses and Dog's-tooth Violets, is a sight too beautiful ever to be forgotten.—W. Allan, *Gunton Park, Norwich.*

On Raising the Clematis from Seed.—As a hardy plant now indispensable as a climber in shrubberies and for clumping, I may instance the Clematis, of which it is very easy to raise a large collection from seed in a short time. Last year I seeded some of the early-flowering sorts, such as Albert Victor, Lady Londesborough, Lord Londesborough, Mrs. James Bateman, Miss Bateman, Standishii, and azurea grandiflora, and, when the seed was ripe, sowed it in the autumn. None of it vegetated till this spring, for the seed is very hard and requires time to vegetate, even when in a slight bottom-heat; but the young plants have made wonderful progress this summer, and a few are now showing a bloom on them. It may be said that as plants of all the best varieties of Clematis can now be procured from nurserymen at a reasonable rate there is no use in trying to raise seedlings of them. There is, however, an excitement in trying to raise some new sorts of good properties, and in a large collection of seedlings this may be expected as they gradually come into bloom.—William Tillery, in the "Florist."

The Tom Put Apple.—This is a common Apple in this neighbourhood. One of my workmen, who has been accustomed to grafting and pruning Apple trees all his life, states that he recollects very old trees of Tom Put being in existence more than forty years ago. When exposed to the sun, it is a very high-coloured Apple; but faintly coloured when grown in the shade. Its quality as a culinary Apple is first rate; but I have never thought it good enough for dessert. It is in high repute here for making Apple jelly, which, when well made, is excellent. The tree is an extraordinary bearer; and, therefore, grows but slowly. Indeed, compared with other sorts, I have never seen a good tree of it in an orchard. The best are to be found in cottagers' gardens, where it stands alone. Its fruit sells readily in the market, and it is a good rent payer. This, Cellini, and Hawthornden, I consider to be three of the best Apples for small gardens.—John Garland, *Killerton, Exeter.*

—— I am pleased to have brought back to my recollection this Apple, which was a favourite of mine in my younger days, and is very common in the gardens and orchards of Devon, especially in cottagers' gardens. I believe I may say that I have seen trees of it as old as any in that part of England, some being from seventy to eighty years old, and others even more. It is a most prolific cropper, and combines the triple qualities of an excellent cooking, eating, and cider Apple. The tree is a rapid grower when young, if in good soil, otherwise I have known it to remain stationary and bear prodigiously —in fact, it then produces more fruit than foliage. The tree has a spreading habit of growth; the wood is stout, and well studded with bloom, generally in pairs. The one great peculiarity of the Devonshire Tom Put, and one by which the tree may be easily identified, is the knotty protruberances on the branches, though not so prominent as on the Welsh Burr Knot. The fruit of Tom Put keeps well up to Christmas. There is another excellent Apple much grown in Devon in company with Tom Put, called the Queen Apple, which is a wonderful bearer, and the fruit is generally a little larger than the Tom Put. It is quite covered with a dark red skin, striped with a lighter shade of the same colour, which penetrates to the core. It is an excellent eating variety, and useful also for cooking, having the appearance of pink Rhubarb when served up in pies.—J. Taylor.

LARGE *v.* SMALL SEED FOR PLANTING.

Dr. Gustav Marek has recently published a valuable paper on this important subject, embodying the results of a great number of experiments made by him at the experimental stations at Halle and Leipsic. Most convincing proof of the superior value of large seed is furnished by the results of some of his experiments in the garden. Beans and Peas were planted in the garden, small and large seeds of each kind being planted on adjacent plots, the Beans 12 inches apart each way, and the Peas in rows 10 inches apart and 2 inches asunder in the row. The crop was carefully harvested, and measured when ripe, and the progress of growth was closely watched during the season. The larger and more uniform growth of the plants from the larger seeds, from the beginning to the end of the season, is shown in the condensed tabular form in which we have arranged the results of these experiments. Height is given in inches and weight in ounces, if not otherwise specified.

Beans.	Plants from Large Seed.	Plants from Small Seed.
May 23rd.—Height of plants	6—8	3—9
Average number of leaves	8	6
June 9th.—Height of plants	12—5	10—11
June 11th.—Number of plants in bloom	45	12
June 17th.—All the plants in blossom. Ten average plants taken up from each plot. Average height of plants	24	20
Average number of leaves on each plant	13	11
Aggregate weight of the ten plants when dry, in grains	837	576
July 31st.—Pods fully formed. Whole number of pods	3,138	2,799
August 5th.—Crop harvested. Total weight of vines and pods ...	219	183
Weight of seed, first quality	162	121
Weight of seed, second quality	6	25

In whatever way the plants are compared, and however minute the measurements that are made, the advantage remains always with the plants from the large seed. The much greater uniformity of growth cannot be shown in the table without taking too much space, but it appears all through the details given in the original paper. To give one or two instances:—Of the ten plants taken up June 11th all but one of those from the large seed had its leaves as given in the table, and the odd one had twelve leaves; on the other hand, of the plants from the small seed some had ten, some eleven, and some twelve leaves, and one had thirteen. The uniformity of the plants from the large seed was marked. At the rate given in the above table the increased yield per acre of seed of the first quality that may be obtained by the use of large seed rather than small would be 250 lbs. A similar course of experiments with Peas gave the following results:

Peas.	Plants from Large Seed.	Plants from Small Seed.
May 23rd.—Height of plants	6—8	4—5
June 6th.—Height of plants	18	10—12
June 19th.—Ten average plants taken up from each plot:		
Average height of these plants	44	34
Average number of leaves	15	13
Average weight of the ten plants, green	11—5	9
Ditto, dry	2	1—6
July 26th.—Crop harvested		
Total weight of vines and pods	201	192
Weight of seed, first quality	48—5	19
Ditto, second quality	19	37

In the case of the Peas as well as of the Beans, the plants from the larger seed were better throughout the season than those from the small seed: the superiority of the former was specially marked in respect to the quality of the seed harvested, as shown in the table. Professor Lehmann, of Munich, carried out a somewhat similar course of experiments with the same plants, and with still more striking results in favour of the use of large and carefully-selected seed; and in his experiments not only did the larger seed yield a larger crop from the same number of plants, but a much larger proportion of the small seed failed to germinate in the garden, or at least to push the young plants to the surface of the ground, than of the large seed.

Berried Aucubas.—It is perhaps fortunate that the berries of the Aucuba are not ripe at Christmas, as, with the mania that there exists for cutting off everything that bears the semblance of a red berry for house or church decoration, these pretty shrubs would soon be reduced to the condition of bare stumps. I find by experience that elevating the male plants above the females is the most effective way to secure a good crop of berries. Whether insect agency assists in the fertilisation or not, there can be little doubt that the pollen is conveyed in the air over the whole of the plant to be fertilised, and all the blossoms are regularly set. In a garden near here is a large female plant growing on a sloping border with a south aspect, the growth of which, though robust, is not luxuriant. Prior to its flowering in the summer, a small male plant was placed in a box which was elevated above it, and the result is se [illegible] a marvellous crop of berries all over the plant. It will, before long, be a grand specimen.—A. D.

Two Good New Hardy Shrubs.—I am happy to be able to inform your readers, who are fond of hardy ornamental shrubs, that the beautiful and distinct Aralia quinquefolia has proved itself perfectly hardy in the extreme north of Ireland, where it withstood thirteen degrees of frost unprotected without suffering in the least therefrom. This plant might probably be more correctly described as Fatsia than Aralia, as it is quite in the way of the shrub known as Aralia Sieboldi, whose correct designation is Fatsia japonica. Cinnamomum sericeum has also most unexpectedly proved itself to be perfectly hardy with me in the County Cork. Though we have had unusually severe frost this winter for our mild, moist climate, even the young growth of this summer, which, in many reputedly hardy shrubs was burned and shrivelled up, was quite uninjured on this Cinnamon.—W. E. G.

Lebanon and its Cedars.—All who have visited Mount Lebanon agree that its Cedars have become very scarce. Rauwolf, who counted them in 1575, found twenty-four; Mandrell, in 1696, could only discover sixteen; whilst Labillardière, about a century later, found in all about one hundred, of which seven were much larger than the rest; none of these three travellers could, however, find any young ones. Although there are so few Cedars on Lebanon itself, I have always understood that they still exist in comparative abundance on other mountains north of Lebanon, and invariably on their summits. The fact that this Cedar loves humidity, and is now only found on the confines of perpetual snow, has induced some to imagine that Lebanon could never have been covered by this particular tree, the term Cedar being probably a free translation of a word which might have been applied with equal right to the Cypress tribe. I should feel much pleasure in seeing in your columns a full detailed account of this memorable mountain and its Cedars.—John Cornhill, *Byfleet.*

Growing Oaks where Sown.—In the spring of 1845 I planted with Acorns a piece of ground nearly 2 acres, in order to see how the Oaks would do without being transplanted. They were sown in rows 6 feet apart, and between each row we put in Larch as nurses. We had no stated times for thinning, but did it whenever we found that it was required, at the same time making selections of such as we considered the best plants for permanent growth. In pruning we left the dwarfest-growing around the selected ones, so as to get a good clear stem before allowing them to form a round head. The result is very satisfactory, inasmuch as the plantation consists of a beautiful lot of trees, averaging from 40 to 50 feet in height. The only difficulty or drawback connected with using Acorns is the depredations by mice and rooks. Rows in which were defects from this cause we re-planted, and Oaks thus raised have gone on better than any we ever raised from the nursery. I may add, that they are growing on a piece of land once cultivated by the late Mr. Loudon. —Tewensis.

Domestic Trees.—Apple trees and all fruit trees have a domestic character which brings them into relationship with man They have lost in a great measure the wild nature of the forest tree and have grown humanised by receiving the care of man, and by contributing to his wants. They have become a part of the family, and their individual characters are as well understood and appreciated as those of the human members. One tree is harsh and crabbed, another mild; one is churlish and illiberal, another exhausts itself with its free-hearted bounties. Even the shapes of Apple trees have great individuality, into such strange postures do they put themselves, and thrust their contorted branches so grotesquely in all directions. And when they have stood around a house for many years, and held converse with successive dynasties of occupants, and gladdened their hearts so often in the fruitful autumn, then it would seem almost sacrilege to cut them down.—Nathaniel Hawthorne.

Wood Ashes.—These form a valuable manure, often procurable at home. It is rich in potash and soda, and may be used with good effect either by itself or mixed with other manures. Applied to lawns, it restores the verdure in a wonderful degree. A patch of underwood near here was burnt accidently three years ago, and the spot has been quite marked since by the luxuriance and colour of the Grass. About gardens, wood ashes can be had in greater or less abundance almost every year. We are in the habit of saving all prunings and cuttings of fruit trees and shrubs, and burning them annually for the sake of the ashes and charcoal, contriving always to burn as much earth and general rubbish with them as possible at the same time, to increase the value and bulk of the material. It is a good manure for Vine borders, and is said to improve the colour of the berries.—J. S.

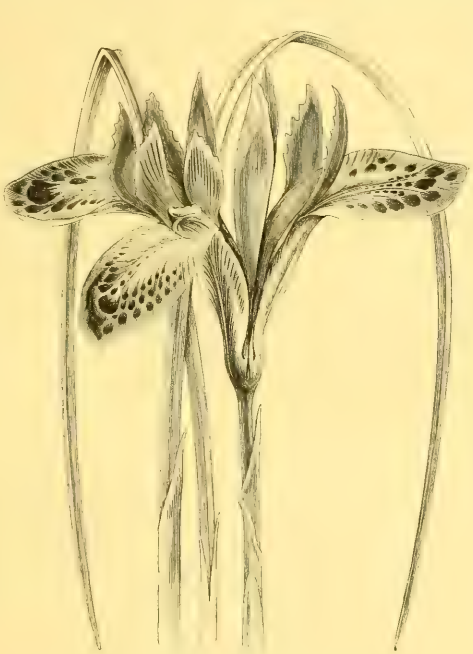
THE FLOWER GARDEN.

NEW WINTER-FLOWERING IRIS.

(XIPHION HISTRIO.)

This, when seen peeping through the ground in winter or early spring, reminds one of the common Netted Iris (I. reticulata); but its growth is rather taller, and the "fall petals" are broader and more conspicuously spotted, or rather blotched. Its colour is rich bluish-purple, flushed towards the base of the petals with rose-pink, the markings being of the deepest purple relieved by a medial ridge or crest of gold in the centre of the three external perianth segments. Its leaves are, like those of the Netted Iris, four-angled, and, like that beautiful plant, this also belongs to the bulbous group. When I first saw it pushing through the earth on an eastern border at Kew, in the winter of 1874, there was a little patch of snow beside the flower, and nothing could have set it off to better advantage than this, and a tuft of the vivid green Poa annua, with which it was also associated. This Iris is described as a native of Mount Lebanon and also of Mount Gerizim; it was sent to Kew by M. Berberey, of La Ferrière, near Geneva, in March, 1873, who describes it as nearly related to I. reticulata, from which it differs not only in structural characters, but in flowering six weeks earlier than that species. We have now before us flowers of it even more delicately pencilled and blotched than that lately figured in the "Botanical Magazine," and, while the flowers are there described as being inodorous, the blossoms thus freshly gathered are deliciously fragrant. Mr. P. Barr, from whom we have received the flowers in question, informs us that it has been in bloom with him for the last fortnight without having received any protection whatever. Its culture is by no means difficult. Treated like the last-named species it grows and blooms freely. Our engraving shows the size of the flower, and its colour as far as can be done by a woodcut. This, with its allies, I. reticulata and I. stylosa, is well worth a place in sheltered positions in warm and deep rich soils and in every garden.

B.



Xiphion (Iris) Histrio.

CANNAS.

Few fine foliaged plants are more useful in gardens than these, and none are more easily grown or propagated. Seeds of the more popular varieties are offered by all nurserymen, and are very easily raised and increased. Seeds, for instance, sown in heat in February will form good plants for planting out-of-doors in sheltered situations in June, and are useful for furnishing the conservatory and plant stove throughout the autumn and winter. The fact is that since it was discovered that Cannas and many other plants of a similar character would bear open-air treatment and fill a niche with fine foliage in the sub-tropical garden throughout the summer, glasshouses have, in many cases, been somewhat denuded of beauty to add to that of the open air garden. There is no need to make such mistakes, for Cannas in plenty may be had for all purposes indoors and out.

Cannas under Glass.

Well-grown Cannas are almost equal to Musas or any other fine-foliaged plant, always excepting Palms and Ferns, for house decoration. The plants from seeds sown early in the spring, and subjected to a moderate temperature of 60° or so, invariably have a freshness, size, and beauty of flower and foliage which they seldom attain out-of-doors. The flower of the Canna has been of but little use for sub-tropical purposes. Under glass, however, the elegant branched spikes of flowers, ranging in colour through yellowish-red, orange-red, scarlet, crimson, and bright red, prove attractive. Some of them are also mottled with different colours. The seed, hard and black, from which the Canna has received the name of Indian Shot (at the base of the flower spike), is also an object of beauty and interest. Doubtless, however, the leaves are the chief attraction of Cannas, and their habit and stature, ranging from 2 to 3 feet, fit them admirably for forming groups, centres, or lines in glasshouses. The effect of Cannas in pots is often much marred by growing too many together in one pot. In small houses, and as furniture to shelves or narrow borders, Cannas are most effective when grown as single plants. Treated thus, they produce quite a different effect to the ordinary huge masses that one meets with even in small houses, perhaps a dozen in a 12-inch pot. Again, Cannas may often be planted out with excellent effect to form groups of foliage here and there in the centre of the bed of conservatories, to relieve the glare of the ordinary kinds of conservatory plants. They also look well against roof pillars supporting the base of such that are clothed with climbers of the usual sorts. Groups of them planted out are also most useful for furnishing shady places in the backs of borders in out-of-the-way corners—for Cannas will grow fairly well in the shade. Being easily raised alike from seed and by root division, and bearing the dry air of dwelling rooms with comparative impunity, Cannas are among the most useful plants for furnishing rooms, halls, staircases, &c., being fine foliaged plants, and at once dignified and elegant. By growing a few plants late in pots, Cannas would prove useful for furnishing small plant stoves that were mostly devoted to the culture of Caladiums, Gloxinias, Achimenes, &c., in summer. Such houses where no extensive collection of stove plants are grown, and but few winter-flowering plants, often have a poor unfurnished look in winter. By furnishing them with Cannas, the houses would look well, while useful material would also be held in readiness for room or conservatory furnishing if needed. The Canna is not at all particular as to soil. Two parts of loam to one of leaf mould, or thoroughly decomposed farm-yard manure, with a little rough sand, suits it well. It is readily raised from seeds, which may be steeped in tepid water for twelve or twenty-four hours before sowing, to facilitate their vegetation, as the seeds are hard. They also come up all the sooner if sown in a Cucumber frame, or subjected to a temperature of 65° to 75°, though they will vegetate in a much cooler place. As soon as fairly up, the plants should be potted off singly, taking care not to break nor injure the somewhat fleshy roots. Shift on as the plants grow, and finally place them, if to be used singly, in 6 or 8, or at the most 10-inch pots. As regards their culture, it may be said that the more liberal their treatment, and the higher the temperature (up to 70°), in which they are kept, the faster they will grow. But they will do very well in a temperature of 50° or 55°. They also bear manure-water well, and will respond to liberal feeding by the enlarged size and deeper colour of the leaves, and the longer and finer spikes of flowers. The only care that Cannas in a dormant state need, is to see that neither the roots nor crowns are frozen, and that they are kept rather dry. A temperature of 40° to 45° suits them well, but they are so hardy that they may be wintered in the open air. In that case the bottom of their root-run should be made dry by extra drainage, so that no stagnant water can stand upon the roots. Planted in good loam, over a substratum of brickbats 6 inches in thickness, and with the crowns covered with leaves or litter in the way that Fuchsias and Tea Roses are often treated, Cannas winter well in the open air. It is, however, safer in a general way to take them up and store them closely together on the floor of a root cellar or fruit room, or under a stage in a house from which frost is excluded. Of course those grown in pots should receive similar protection; and if any are wintered in the stove, they must not suddenly be thrust out into a low temperature during cold weather, or the sudden transition from heat to cold may kill the plants, roots and all. As regards the use of Cannas out-of-doors, there cannot be a doubt that they are the very cheapest, and among the most effective, of all the so-called sub-tropical plants. The simplest way of treating them for this purpose is to plant out in good rich soil either in masses or lines about the 1st of June. Water freely with manure-water should the weather be dry, and the plants must do well, unless the weather prove unusually cold. About the middle of October, lift the plants and store them closely together on the floor of a cellar, house, or cold pit. In February or March, pull the Cannas to pieces, and pot each piece separately if the object be rapid increase. A better plan than potting is to make up a slight hot-bed in a pit, cover with 6 or 10 inches of loam and leaf mould, divide the Cannas, and plant them out on this bed, and by proper attention to watering and giving air, the result will be a perfect jungle of magnificent Cannas to plant outside in June. A spade should be used for transferring the plants from the pit to their decorative quarters; and if the plants be carefully moved and watered in their new home, they will grow away without check, and the effect will be immediate and also permanent. There is yet another mode of treating the old stools—keep them entire and as backward as possible. About the middle or towards the end of May prepare rich and sheltered spots on lawns, shrubberies, or borders, by removing the old soil, and re-placing it with one yard or so of loam and manure. Plant the Cannas on these, burying the crowns a little deeper than they were before, and mark how massive and rich a single Canna root stock can become.

Among the finer sorts for in-door or out are Canna metallica, C. nigricans, C. Van Houttei, C. peruviana, C. maxima, C. expansa, C. discolor, C. floribunda, C. Bihorellt, C. grandiflora floribunda, C. Rendatleri, C. rubra superbissima, C. aurea, C. glauca, C. compacta, C. Warczewiczii major, and C. Edouard Morren. Packages of seed may be had from 1s. to 2s. 6d. per packet, and plants of named varieties from 8s. to 24s. per doz. In no other tribe of plants is it possible to purchase so much permanent tropical-like beauty for so little money. It may be added that the arrow-like flowers of the Canna, carefully mounted, have a unique effect in floral arrangements, while few plants are more useful for cutting in masses for furnishing large vases or baskets for ball-rooms, &c. Canna leaves may also be used in lieu of Palms, Ferns, or other fine-foliaged plants for decorative purposes. D. T. F.

Moss for Protecting Herbaceous Plants.—Mr. M'Gann (see p. 543, Vol. VIII.) suggests that herbaceous borders might be neatly carpeted with Moss during the dead season—a very pretty idea, but impracticable. In this open weather the blackbirds and thrushes are doing good service in the borders in question by picking up worms, grubs, and all sorts of vermin. Were the borders trimly carpeted on Mr. M'Gann's plan, these busy little assistants would make short work of it, scraping it up in every direction to get at food below.—SALMONICEPS.

THE HOLLYHOCK.

I KNOW not whether the wet summer of the present year had anything to do with it, but it is quite certain that the much-dreaded Hollyhock fungus has been much less destructive this season than it was last year, when the summer was drier; yet there have not been wanting indications that it is yet amongst us, though its destructive tendencies have been much less marked. This comparative freedom from the pest seems to point to the fact that the Hollyhock flourishes best when kept moist at the root. It is a plant requiring a generous growth, for strong roots, when planted in good soil, send up shoots of amazing vigour, moisture at the root and falling rain on the foliage keeping the plants robust and healthy in appearance. As regards the propagation of this plant, it may be said that grafting is a mode that at one time was applied more than it is in the present day; and was effected about the month of March. First, if the growers had any seedlings in pots with stems of the thickness of a pencil, or even thicker, he would cut them away almost down to the surface of the soil, at the same time taking out a little of the mould; then the sorts required to be increased were side-grafted on the seedling stocks. This process might be denominated whip-grafting, and the scion, made of an eye, was tied tightly to the stock by means of a piece of bast. When the grafting was finished, the mould was put back deep enough to cover the graft and exclude air, and the pots were then plunged in a gentle bottom-heat for two or three weeks, the plants being ready for a shift at the end of that time; they were then gradually hardened off till required for planting out. The best plan of getting up a stock of plants is by propagating in summer by means of "eyes." All the side shoots should be allowed to remain on the plants till they get a little ripe, and this stage of growth is soon known by reason of their light brown colour. These side shoots may then be divided by cutting them below the eye and leaf-stalk, and about 3 inches above, leaving leaf and stalk on to assist in developing the eye. A small cold frame is one of the best contrivances in which to plant the eyes, placing them in a bed of sifted leaf mould and sand some 6 inches in depth, planting each variety by itself, and all in regular lines. It is always well to water as little as possible, and therefore the compost should be used moist, and the frame shaded, to retain this moisture in the soil as long as possible. Cuttings may be struck in this way with great success; and, as soon as they begin to throw up a few leaves, they are ready for potting off. Young growing plants of Hollyhocks should never be allowed to become pot-bound, or the flower-stem is apt to be thrown up too early. Therefore, the aim of the cultivator should be to keep the roots moving previous to planting out by shifting into larger pots as required, till they are in 6-inch pots, when they will be fine plants for planting out to flower. The Hollyhock thrives best in a somewhat stiff clayey loam; if too cold and stiff a good quantity of rotted turf and decayed vegetable refuse may be added to keep it open. The ground should be trenched 2 feet deep before planting, mixing in at the same time a good quantity of well-decomposed manure. Just previous to planting the soil should be turned up once more to get it thoroughly mixed and workable. This work should always be done when the ground is dry, otherwise it is apt to become sour, and the plants do not thrive. If a plantation of Hollyhocks is wanted, the plants should be about 3½ feet apart, and some 4 feet apart in the rows. This enables the cultivator to get among the plants and give them all the attention they require. It is well to put some leaf mould about the roots at the time of planting, as it serves to start the roots and gives them something to lay hold of at once. Planting should be finished early in April at the latest, and if the weather prove dry afterwards, and through May and June, some water must be given twice or so a week, when the flower-stems are forming. Water should be carefully applied if the spikes are wanted for exhibition purposes; and, as an old florist once remarked, "If too much water be given at this stage, there is a danger of the buds forming widely on the spike, which gives it a very irregular appearance when in flower; rather mulch to keep out the drought." When the flowers are all well formed and the spike is getting well covered with them, some manure-water may be applied; but if the plants are healthy and strong, and the soil in which they are growing is rich, it is scarcely necessary to apply it, as the flowers are certain to be fine and symmetrical. In selecting spikes for exhibition purposes, the healthiest and most regularly set spikes should be fixed upon—say about three weeks before they are wanted—and they should be shortened back to about 4 feet of flowers. The reason for doing this is that the flowers fill out better and burst more regularly. As a matter of course cultivators have to depend very much on their own observation. As some varieties come into flower much quicker than others, much depends on the variety and the state of the weather at the time. When the flowers begin to open they should be shaded to keep the bottom ones back, the shading being gradually extended upwards, till the whole length of the spike that is required to make a good one is shaded. For exhibition purposes there is nothing like a good length of full-blown blooms. A very good material for shading the light flowers, is what is known as pack sheeting, a thin, light material, of which two thicknesses should be used on some parts if necessary, which will generally be on the side next the sun. Tiffany will do well for the darker sorts. By being too closely shaded the dark flowers often get spoiled in colour. A piece of oil-cloth, or any waterproof article, should be placed on the top in wet weather to throw the rain off, as it is of great importance to keep the flowers dry, especially when they are getting into full bloom. The cloth should be furnished with tapes to tie and untie readily, as it is sometimes necessary to take the shading off to allow the sun and air to dry the flowers when any dampness gathers about them. For the purpose of providing the skeleton of the shade take two poles, place one on each side of the flower-stem, about 2½ feet apart, and bring them together at the top by means of a hoop 1 foot or so in diameter; fasten a stick across the top of the poles, and to this tie the top of the spike to keep it from shaking, as the supporting stake against the plant will be withdrawn. Then another hoop should be placed about the middle of the frame, and the hoops can be made of strong Willows, light suckers of Ash, or pieces of ordinary cane. Take a piece of strong string, fasten it to the top hoop, give it a turn round the next, and fasten to a strong peg driven into the ground or secure it to one of the upright stakes, similar fastenings being made on the other side. The two strings answer the purpose of two poles, and keep the cloth from rubbing against the flowers. Such, then, is the mode in which a Hollyhock "crinoline" is formed. These crinolines are rather unsightly things in a garden, but the grower who exhibits must for a time sacrifice the picturesque, if he would win at the exhibition table. The following list comprises some of the finest varieties of the Hollyhock in cultivation:—Alba superba, pure white; Carus Chater, reddish-crimson; Bullion, golden-yellow, extra fine; Constance, delicate pale flesh; Crimson King, deep cherry-red; Eclipse, bright rosy-red; Excelsior, rich shining maroon; Edward Speed; French White, suffused with deep purple; Fire King, glowing reddish-crimson; Golden Drop, deep bright yellow; Incomparable, heavily tinted apricot; Jessie Dean, clear apricot tinted with yellow; James Allen, bright plum; Junia, pale primrose, suffused with purple; Marvellous, deep orange-buff; Nonpareil, rich dark purplish-maroon; Queen of Yellows, clear bright yellow; Rose d'Amour, rosy-peach; Rosy Queen, delicate rose; Ruby Queen, deep shining ruby; Selina, pale creamy flesh, carmine base; Triumph, very dark crimson; Tyrian Prince, rich crimson-purple; Walden King, bright scarlet; Walden Queen, soft delicate flesh; and Walden Primrose, clear pale primrose, extra fine. QUO.

RAISING GLADIOLI FROM SEEDS.

MR. BOSSIN, a well-known and successful hybridiser, tells, in the "Revue Horticole," how he raises his Gladioli. Those who intend to sow them should take care to collect the seeds from the finest plants only. After removal from the capsules, they should be laid out to dry for a few days, and then be put away in paper bags until the time comes for sowing, which will be in November or December, or in February and March. I sow every year in autumn, and my mode of proceeding is this:—In November or December I take some earthenware pans, or large pots or boxes, and fill them with peat earth to which a few handfuls of good rich loam, well mixed beforehand with rotted dung, has been added. When the pans or pots are ready, they are filled with the compost to within 1½ to 2 inches of the rim. On the top we put half an inch of pure sandy peat earth, sprinkle the seeds evenly thereon, and press them in with the back of the hand, covering them in with a quarter of an inch more of fine peat. I leave the pans or pots out of doors until rain or frost comes, and then remove them to a dry greenhouse, where they are housed for the winter, getting very little water; and only when the soil is quite dry, as any excess of moisture would rot the seeds. Whilst they are in the greenhouse care must be taken that the mice do not eat the seeds. At the end of February, or quite the beginning of March, the seeds begin to germinate, and soon a crop of small plants is seen, presenting the appearance of fine Grass. When the winter is over, the pots or pans are placed out of doors again, choosing a good position, where they are sheltered from the frost and cold spring rains. They are then left to grow without further care beyond watering and pulling up the weeds that appear amongst them. When autumn comes—that is to say, in November—I take up the small bulbs and dry them. When dried they are packed away in large pots with some fine dry sand at the bottom, putting in a layer of bulbs and a layer of sand alternately. In this way they are kept through the winter in a dry place where it is neither too hot nor too cold, and at the end of February are pricked out at distances of 4 to 6 inches apart every way, in beds covered with frames to keep out the frost. Towards the end of May the lights are taken off and the plants are treated like old ones. In the course of the month of August some flowers will be already visible on the two-year old plants; but for the general blooming we must wait till the third year, when the bulbs will be somewhat larger and better shaped than in the year previous. I take them up again in autumn, and keep them in sand through the winter, as before. Early in February I prepare the beds to receive the three-year-old bulbs, choosing a suitable spot where the ground has been well manured the year before, fresh manure being detrimental to all bulbs, and particularly so to Gladioli. When the beds have been got ready and well raked over, I draw five equidistant lines across them a foot apart, along each of which I set in a row of bulbs at 12 inches apart and 3 or 4 inches below the surface. This is done about the end of February, and, if frost supervenes, the beds must be covered over with litter or mats until the danger is past. I have magnificent displays of Gladioli, treated thus, as may anyone else who will follow the directions above given.

A NEGLECTED FLOWER.

THE RANUNCULUS.

IN the round of favourite flowers grown by florists of a generation since, there often used to come in due succession between the Pink and the Picotee, and in most refreshing contrast to all before and after it—the Ranunculus. Now its place in such a garden circle is often vacant. Not many Tulip cabinets have now their few drawers at the bottom for Ranunculuses. It is a great pity, because the flower is full of capabilities and properties attractive to the florist. It possesses great command of colour. In the self varieties there are crimson and purple-blacks, scarlet, red, rose, pink, and white. In yellows, orange, lemon, cream; also white. There are classes of white and yellow grounds with tips and edges, mottles and stripes of various colours, usually some shade of purple, brown, rose, and red, and in addition to these are some curious roans—grey and red—that are a fancy dress peculiar to the Ranunculus. One of the chief charms of this flower, particularly to a florist, is that it is very sportive and vigorous from seed, so much so that a seedling-bed is, perhaps, the great surprise and charm of Ranunculus-growing. Even the most double exhibition flower will frequently afford a seed head when fully expanded, but very seldom any stamens. Pollen must, therefore, be obtained from well-shaped and coloured semi-doubles that afford it freely. Good seed somewhat resembles scales or flakes of bran with a slight brown germ set in the middle. It is very delicate, and like seed of the Auricula is better left uncovered by any soil, and the soil kept generally moist by a sheet of glass over it. Sowing may be done at the time the old tubers are planted —about the end of February. The Ranunculus has, no doubt, an ill name for being a crotchety, ill-tempered old flower, a punctilious tuber requiring everything to its own good liking, or else declining to bloom. The plant is, indeed, particular in some of its requirements, but troublesome in none. It is exact but not exacting. It requires precisely its 1½ inches underground, otherwise the new tuber which is naturally formed over the very neck or woolly crest of the old one will endeavour to rectify matters by diving down or coming up by means of a sort of underground stem, dropping several of its claws in the course of it, and making an awkward if not weakened root. At planting time I always wet the tubers twenty-four hours beforehand; they then swell marvellously, and do not literally get up and walk out of bed, as they often do when planted dry. Moistening them also enables one to detect any diseased or rotten claw, which ought to be removed, but cannot be easily detected in a dry state. The claws when thus swelled are not brittle or liable to be snapped off so easily at planting. Knocking off a healthy claw is so much loss of stored-up strength, and it is worth while to be careful. Another emphatic demand of the Ranunculus is a firm bed for growing in. If I were doomed to take those forced and dismal walks called "constitutionals," I would never forget to take some over my next year's Ranunculus bed. It would be a walk "with an object."

There are matters which the Ranunculus is more particular about than soil, though it likes that good and hearty. Mr. Tyso, the present representative of this flower, most wisely, because most naturally, says that a bed made up of turfy sods from a strong pasture where the Buttercup grows will suit our member of that family, the Ranunculus. This is the best advice that can be given where the native soil of the garden is not a deep retentive, yet well drained loam, or one that will grow a hearty Cabbage. Enrichment of cow or hotbed manure may be used, but it must be thoroughly well decayed, and the bed is far the best when made up in October.

Again, another vital point in Ranunculus culture is a well-aired bed for sleeping in—that is, a scrupulously dry storage when out of the ground. This tuber has literally to be shelved for more than six months out of twelve, owing to its foliage, which would naturally spring afresh in autumn, not being hardy enough to certainly bear our winters. It is therefore forced to rest from about the third week in July to the third week in February. Where there is the slightest dampness the naked tubers are peculiarly liable to contract blue mould at the neck. It is generally fatal, disorganising the claws and eating into the heart, and when in the ground the whole structure rots. The only thing I know of for affected tubers is to dust them thoroughly with dry brimstone, and keep them from further damp. Rotten claws may be detected by their soft consistency, brown colour, and by the moistening process I have spoken of. Healthy claws are white inside. Prevention is better than cure. I reserve for my last note a deeply important crisis in the culture of the Ranunculus; this is, taking up. No amount of attention to soil or anything else will atone for negligence here. The new tubers strike directly the vigour of the bloom and foliage is past, and every new fibre struck out and afterwards unnaturally checked is weakness to the tuber. It must not only be replaced at some expense, but easily affords a starting point for mildew to lay hold of. The bloom ought to be shaded, for the first heavy rain upon expanded flowers will beat all down, and break many. The cover should be left on till all are taken up, and it will thus keep the ground cool and dry, and free from the warm stimulants of July rains and sun upon the excitable tubers. I never water my beds artificially, preferring to shade them against very hot sun. But a dry May is always against the Ranunculus, and watering seems to weigh little in their favour when the air is dry and weather rainless.

In Rome I saw, a few years since, a bed of Ranunculuses that were just opening their buds about the beginning of February. They were double, and had some edged flowers among them, but the full quality I could not discern. I thought how grandly this neglected flower might be grown where it could remain to form clumps, only to be moved a moment for re-arrangement. Were it in my power this is how I would grow my Ranunculus—I would yearly top-dress the beds and re-plant immediately, affording the foliage a glass protection as of a house that freely admitted light and ventilation, and was entirely frost-proof. But this is not the place to build glass castles in the air. I have known the florist Ranunculus since my boyhood, and I go on with it in the old way. I have had failures and successes, success surviving the partial shock of failures. Perhaps a chequered experience like this, being natural, is a useful sort of one to recall. I am glad to say a word for one of my dear old favourites, and if it will be of help or interest to any fellow cultivator, or if it will lead any young florist or older hand to say "I will make love to the Ranunculus," it would then repay me for a congenial scribble.—F. D. Horner, in "Journal of Horticulture."

Ophiopogon japonicus as an Edging Plant.—This plant, which has all the aspect of a Squill, was used in the beautiful gardens of Bellagio as a substitute for Box edging, especially along the walks under trees, and it seemed to fulfil its purpose most satisfactorily. It belongs, I believe, to the Liliaceæ. The roots are as tortuous and interlaced as those of the Lily of the Valley. The flowers are quite hidden by the long, dense, and Grass-like leaves; they are of an iron blue, and, as I have said, like those of Scilla autumnalis. The plant was new to me, and was named for me by M. Edmond Boissier, whose name is so well known as a collector of Alpines among the Sierras of the Spanish Peninsula. He also pointed out to me a Spurge (Euphorbia marginata), supposed to be an American species, with the leaves symmetrically bordered with white. The effect of this was charming when growing near dark-foliaged plants.—Peter Inchbald, *Hovingham Lodge, York.*

The Large-flowered Christmas Rose.—I have to thank Miss Hope for giving us such ample notes about this interesting plant, and especially for amending my statement that it is very easily increased. My reasons for saying so were :—First, that a very small plant, which Miss Hope was kind enough to give me in 1872, has increased so much in size as to have been for two months the principal ornament of the border in which it is placed; and secondly, because I had the pleasure last October of inspecting a bed filled with young plants at Wardie Lodge. At all events, we may be grateful that this beautiful and rare plant is not so slow or difficult in propagation as, for instance, Trillium grandiflorum, Rhexia virginica, Spigelia marilandica, and others. The fact that this variety has not seeded seems certainly to point to a hybrid origin. Helleborus niger is just coming into flower, with orientalis, whereas niger major or maximus began in October, and is still sending up immense flowers. The present scientific name is extremely awkward, and the variety is so perfectly distinct from any other, that I think it should be called Helleborus aberdoniensis, a name which points to the northern origin of the plant. Miss Hope deserves thanks for raising her voice against the growing habit of forcing hardy plants. There is no excuse for it. The conservatory can be supplied with numberless exotics—let our seasons be marked by the return of hardy flowers at their appointed time. They will be all the dearer to us, and not less plentiful. If Alpines and hardy flowers are grown under cover, let it be either in pots in a cold frame, or, better still, in an Alpine house, which is a thing we should see oftener than we do.—Salmoniceps.

The History of the Auricula.—In a pamphlet entitled "Die Geschichte der Aurikel," Professor Kerner traces the history of the discovery and cultivation of this plant, from the time of L'Escluse (Clusius), who first transplanted this species and the hybrid P. pubescens, Jacq., in 1582, from the Tyrolese Alps to Belgium. The latter species, and not the true P. Auricula L., which quickly disappeared from cultivation, is believed by Professor Kerner to be the real ancestor of the cultivated Auriculas of our gardens. The two were known at the time of Clusius under the names of "Auricula-ursi I." and "Auricula-ursi II.," from the supposed resemblance in the shape of the leaves to that of the ear of a bear. The hybrid P. pubescens, which had been lost from the German and Austrian Alps for nearly three centuries, was re-discovered by Prof. Kerner in 1867 in a single locality in the Tyrol.

Rock-work v. Root-work.—I dislike monotony as much as anybody, and quite agree with Mr. Groom (see p. 531., Vol. VIII.), as to the need of securing "individuality" in our gardens; but the very common practice of massing a few roots or stumps together, and fancying that they will prove a home for Alpine and similar flowers, is actually a source of monotony in many gardens. It is, moreover, wrong as regards Alpine flowers, for the following reasons : —the root-work crumbles away in time, and this prevents the ground being firmly consolidated, a necessity for Alpine plants. Dry rot and evil-smelling fungi take possession of it; it harbours vermin of many kinds; and it is offensive to the eye in connection with Alpine flowers, because all who have seen these in their wild haunts know they seam the rocks and cushion the stones, but that roots of trees are rarely or never seen in connection with them. The roots have not at all the same effect as the rocks in preventing evaporation from the soil, and affording a cool firm feeding ground to the roots—which are absolute necessities for Alpine flowers. No doubt a person of good taste may so employ picturesque old stumps that a good effect may be produced; but root-work, employed as it generally is, is a great mistake.—W. S.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Rock-work for Alpines v. Root-work.—True Alpines should never be seen on root-work. There are many objections to root-work. It is never in itself a pretty object, it harbours slugs and other vermin much more than stone-work, and Fungus—a sure foe to higher plant life—grows readily on it. If used at all, it should be kept in the Fernery.—Salmoniceps.

Roses on the Seedling Briar.—I have just received a few dozen charming little plants on this stock. Their clean growth and really good roots show how well suited it is as a stock for most kinds of Roses.—R. Gilbert.

Stauntonia latifolia in Wiltshire.—This handsome foliaged climber is hardy here on a south wall. I planted it in my garden some six or seven years ago, and although never protected in any way during winter, it is now a large vigorous plant. Many of its beautiful glossy leaves are from 5 to 6 inches long, and from 2 to 2½ inches broad. It has not yet borne fruit, and its flowers are not very conspicuous, but they are sweetly scented.—G. B., *Longleat.*

The Gladwin (Iris fœtidissima) as Undergrowth.—In addition to the merits of this plant as a berry-bearer, it makes the best evergreen undergrowth below large trees with which I am acquainted, even when too dry and impoverished for almost anything to grow. The Gladwin, in company with St. John's Wort and Perrywinkle, makes an effective and cheerful combination at all seasons.—J. Groom.

Æchmea Weilbachia Lamprocerus.—This is one of the most useful winter flowering plants we have. It is a light green, smooth-edged Bromeliad, with purple flowers on a crimson stem. In a 3 or 4-inch pot it makes a most useful plant for general decoration. It thrives well in a moist cool Orchid-house, and it is best grown in Sphagnum Moss and sand, but any light material will answer. It is easily grown, and will remain in beauty in a room for weeks together.—Chevalier.

Pyrola secunda.—Of the Pyrolas, six of which are wild in Switzerland, none interested me so much as P. secunda. It differs from the others in having the raceme secund or unilateral. The flowers are of a whitish-green, and numerous. The style is protruded beyond the well-shaped corolla. This species is rare in England, though not unfrequent in the shady woods of Scotland. In Switzerland I met with it in Pine woods, where I saw it chiefly growing by the forest paths.—P. I., *Hovingham Lodge.*

The Caper Plant (Capparis spinosa) in Flower.—On the Lake of Como—growing in terraced gardens—I noticed the beautiful sprays of this trailing plant, the flowers of which are simply lovely, and the tender and delicate green of the foliage harmonises therewith to perfection. The flowers reminded me of those of Sparmannia, with their parti-coloured stamens and whitish petals. They are axillary, and as they burst from the sheathing calyx leaves, displaying their dappled stamens, they must win the admiration of the most indifferent.—P. I.

THE INDOOR GARDEN.

ZONAL PELARGONIUMS FOR WINTER DECORATION.

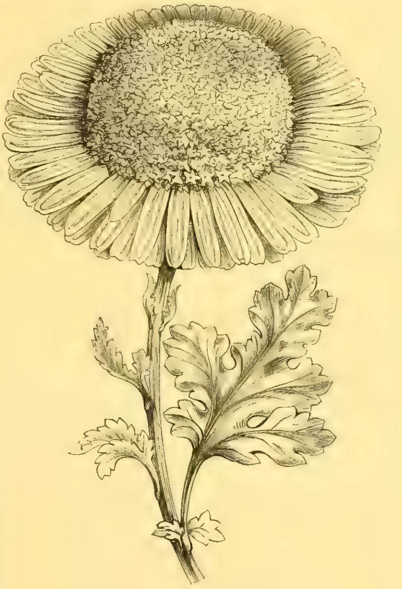
I AM indebted to "W. D. C." for his reply to my remarks upon the winter flowering properties of the Zonal Pelargonium, and I am pleased to find that we agree in our estimation of its value in that respect. The Zonal Pelargonium I know cannot be flowered in perfection during the winter months in a cool house, nor in a damp atmosphere. My impression was from the tenor of "W. D. C.'s" observations (see p. 536, Vol. VIII.) that he alluded to the decoration of conservatories that are attached to, and approached from, the dwelling-house, and are usually kept warm and dry, and supplied with a succession of flowering plants from reserve houses. I had again this Christmas Day the pleasure of admiring the display of Zonal Pelargonium flowers on my friend's dinner table, and the enlivening effect of many varieties in full flower interspersed among foliage plants in the conservatories. So much value does my friend's gardener set upon the Zonal Pelargonium, for its decorative qualities at this season of the year, that a long house is devoted exclusively to its cultivation, from which the conservatories are supplied with fresh plants as needed, and the house with cut blooms. This house was as full of flower as it could have been, had it been midsummer instead of Christmas day. Another house is devoted to the cultivation of foliage plants for replenishing the conservatories, and for the purpose of cutting from for house and table decoration; for the latter, of course, the varieties of Maiden-hair Fern predominate. "W. D. C." asks me to give a list of such varieties of Pelargoniums as I consider most suitable for winter cultivation. I feel some diffidence in complying with this request, because I cannot do justice to the productions of my brother Pelargonium raisers, my observations being confined almost entirely to kinds of my own raising—as I grow only to breed from, and I must plead guilty to having drifted into the usual error that befalls most raisers of florists' flowers, viz., that of breeding in and in; hence, the distinctive characters of our strains. One of my special aims has been to produce perpetual flowering properties, and the originators of my strain, viz., Lord Derby, Leonidas, Celestial, and Louis Veuillot, are all free winter flowerers, especially Louis Veuillot, from which variety, as pollen parent, most of my dark-coloured seedlings derived their origin. Diana has been named as the best variety for winter flowering. The male parent of this variety was Louis Veuillot, and Lord Derby the seed-bearing parent. I noted in flower in my friend's houses on Christmas Day Jessica, Sir John Moore, Nelson, Richard Cœur de Lion, Rienzi, Oberon, Brasidas, Alonzo, Salathiel, Œnone, Hebe, Astarte, Aspasia, Idalia, Imogen, Minerva, Lurline, Iago, Ianthe, and many other of my seedlings not named, which, from being considered too good to destroy, have found their way into my friend's houses, under conditions that they are on no account to go off his premises. Pain's Perpetual and Vesuvius are winter flowerers, but not of the florists' class. Several varieties of M. Postan's and Mr. George's raising I have seen quoted lately as remarkably good kinds, and I believe that Mr. Pearson's splendid strains of hybrid nosegay varieties are for the most part good winter flowerers.

JOHN DENNY.

GARDENIAS.

NOBODY ever tires of the fragrance of Gardenias, or Cape Jasmines, as they are usually called. Their usefulness for cutting can only be matched by their sweetness. Growers of flowers for market have filled houses with them, and in this way they have been made as common and as cheap as Camellias or Roses. Gardenias are divided into stove and greenhouse varieties; but the distinction is deceptive, inasmuch as all Gardenias thrive best treated as stove plants when in a growing state. The latter expression again has led to misconception. Cultivators have mostly flowered their Gardenias in heat, and then forced them to rest in a cool and dry temperature till next year. This is, however, by no means necessary. By keeping the plants in heat they grow and flower, mature their buds, and flower and grow again throughout the season. Under this treatment the plants gain a robustness and vigour, and their leaves a size and a depth of glossy greenness to which they are utter strangers, as a rule, under the once-flowering-in-the-year course of treatment. Therefore, for continuity of bloom and simplicity of culture place Gardenias in a bottom and atmospheric temperature of from 63° to 70°, and leave them alone. We are usually told to prune the plants back as soon as they have finished flowering. That may be done if they are too large, but certainly not otherwise. No instructions could be more injurious. Gardenias left to themselves after flowering, or rather, as a rule, while they are flowering, throw out from one to three shoots from the base of the flower buds. By the time the flowers fade these shoots have made from four to six leaves, and have almost finished growing and begun to form fresh flower-buds. By pruning we simply cut away all these flowers and force the plant to produce new and not half such good or floriferous shoots, thus sacrificing at least three months' time. This process of throwing out fresh shoots and forming more flower buds is continuous, and, therefore, by keeping the plants growing and the knife from them, the flowering also becomes continuous. Of course the amount of bloom will depend a good deal upon the amount of light and heat to which they are subjected. Gardenias treated in the usual way flower and grow best in a brisk top-and-bottom heat of from 60° to 70°. As soon as the flower buds for the next blooming season are formed or the growth finished, the plants may be moved to a lower temperature, and safely wintered in a house or pit at 45°. Some even keep them colder; but 45° is better than 40°, and the latter more favourable than any temperature below it. Gardenias in this state may be had in flower at any time when wanted by allowing six weeks of forcing treatment for the unfolding of their blossoms. G. radicans, perhaps more of a stove plant than any other; is a native of Sierra Leone, and is the only Indian or tropical variety that I think good enough to recommend, and, in the case of those whose space is limited, I would grow only this kind, G. florida, and G. citriodora.

F.



White Anemone-flowered Chrysanthemum.

A Late White Chrysanthemum.—The Chrysanthemum figured in the accompanying woodcut is one of the Anemone-flowered type, and is valuable for its pure white colour and lateness of bloom. The disk is quite white and well raised, as shown in the cut. We found it in Mr. Bullen's nursery at Lewisham, but the owner has no name for it. The distinct appearance of the blooms led to their meeting with a ready sale at the Christmas flower market.

THE CULTIVATION OF FLOWERING STOVE PLANTS.

Amongst the immense numbers of plants cultivated in pots at the present day, many of the stove subjects stand unrivalled for the profusion of their gorgeous flowers and long-continued habit of blooming, alike unequalled for the decoration of heated glass structures and for affording a continuous supply of flowers for cutting. The hot as well as the somewhat cool regions of the Eastern hemisphere, and South America, with its vast extent of territory, have furnished us with a wealth of flowering plants of almost every form and hue, suitable for the decoration of the warm stove and intermediate house. In addition to the good qualities already mentioned, most stove plants possess the merit of being much easier to grow than the generality of greenhouse subjects as regards their requirements in both soil and water. Many kinds of stove plants, although they may do somewhat better in peat, can be grown in turfy loam, where this material cannot readily be obtained of good quality, and in respect to water they are not nearly so impatient of receiving a little more than they require or having it given them before they need it. For these reasons, many can succeed to a certain extent in the cultivation of stove plants who fail completely with the less facile inhabitants of the greenhouse. Another point in their favour is that, when grown to a size that would require more root room for their support than it may be deemed desirable to give them, the heads of the plants may be freely cut back, and the roots correspondingly reduced, a great portion of the old soil being taken away and replaced with new; this may, even with many hard-wooded species, be repeated as often as is found necessary and does away with the necessity for such large pots as would otherwise be requisite. All plants that require the application of fire heat, to maintain a temperature not only some degrees above freezing point, but one that is continually higher than that of a greenhouse, come under the denomination of stove plants. Yet, introduced as they are from so many different parts of the world—some intensely hot, others more temperate, according to the latitude or their more or less elevated position—they evidently, when existing in a state of cultivation, require a considerable difference in the temperature they are grown in. Hence, where an extensive collection of plants exists, all needing more or less heat to grow them, there should be at command the means of keeping those that require it warmer than others that will thrive in a lower temperature, or in quarters of a character intermediate between the hot stove and greenhouse. Where some arrangement of this sort does not exist, there must necessarily be a compromise in the treatment they receive, some being kept hotter than they need, whilst others are too cool. The respective requirements can only be met satisfactorily by the use of separate houses; or where one house is made to do duty, by having a glass division in it, and placing the plants wanting the most heat at the warmest end, and those that will flourish in a cooler temperature in the opposite department. An approach to accommodating all, according to their requirements of temperature, is often attempted by putting the most heat-loving subjects at the end of the house next the boiler, with the plants from the cooler regions at the coolest end; but this only meets the difficulty to a partial extent in the matter of heat, and effects little or nothing on another very important element, the humidity in the atmosphere, as also the amount of air to be given. Both these elements are of such a subtle nature that little control can be exercised over them, as regards regulating any considerable difference in their influence, in the opposite ends of a single house, so as to meet the requirements of the two sections of stove plants under consideration—the cooler of which in most cases, need a much drier condition of the atmosphere, even in the height of the growing season, as well as the admission of more air than would do well for such as are introduced from the hottest, lower-lying regions of the tropics. For instance, the lovely Madagascar Stephanotis floribunda, although a plant that will bear a strong heat, can rarely be induced to flower freely when grown in an atmosphere as moist as that required by the Ixoras from India, or the Brazilian Dipladenias. In the cultivation of flowering stove plants, one of the most essential matters is a house so constructed and situated as to afford as much light as possible. Without this it is vain to expect anything above mediocrity in the results. This will be seen when it is considered how comparatively limited is the amount of cold external air that can be given, especially during the early part of the growing season, consequent upon its causing too great a reduction in the temperature, but still more by its producing too dry a condition of the atmosphere consistent with the absolute requirements of the plants. Their growth, as is well understood by those who have had even limited experience in the cultivation of stove subjects, is very rapid. For this and the preceding reason, unless they are grown in a house that will afford them a maximum of light, the wood and leaves are so soft and deficient in substance as to render them incapable of producing flowers either in their wonted quantity, size, or colour, light being the great compensating element that in a measure makes up for the deficiency of air in which plant life under such conditions exists. Hence, as I have already said, the stove should be so constructed as to afford an abundance of light, and so placed as to be in no way under the influence of buildings, trees, or walls that will either obstruct or absorb light. This is a matter of vital importance, which cannot be too forcibly impressed upon all who essay the cultivation of these plants. With this view, the stove should always be span-roofed, with upright side lights, so deep as to come down to the level of the side stages. In a lean-to, hip-roofed or even half-span-house, the back wall always absorbs so much light as to seriously interfere with the short-jointed, robust growth essential to success. The dimensions of the stove will, of course, be determined by individual requirements. A very useful size for the class of plants under notice is 18 feet in width by 35 or 40 feet in length; if it be narrower than this, it does not admit of the best and most economical internal arrangement; if above the width named, it necessitates the elevation being greater than is consistent with an easy maintenance of the required temperature in severe weather. It should consist of 3 feet of brickwork all round, with movable shutters in the sides. The upright side lights should be 3 feet in depth, and fixed, as the opening of these admits air in direct contact with the plants, than which nothing can be more objectionable or more calculated to check the tender growth.

There should be provision made for sufficient roof ventilation by an arrangement of short lights hinged to the ridges, so as to open with lever rods; this is so much an improvement on the old system of sliding lights that air can be given when required, even in wet weather. It is also infinitely superior to any of the contrivances of shutter ventilation at the ridge, as these always tend to darken the house too much. The internal arrangement may, with advantage, consist of 3 feet side stages, over the pipes, and on a level with the bottom of the side lights. In a house of the above width and elevation, for the hottest section of plants there should be five rows—three flows and two returns—of 4-inch pipes running round the house under the side stage. I do not recommend any piping under the tan-bed, being convinced that there is nothing gained by it. For the cooler stove four rows similarly placed will be enough. In all cases there should be on each side of the house three or four 9 feet lengths of trough piping—that is, hot water pipes with troughs cast on them when made—so that there can be all, or a portion only, as required, filled with water for evaporating to maintain the atmosphere in the moist condition necessary for the plants. Where no evaporating troughs exist, and there is no means of keeping up moisture, except by syringing the pipes and sprinkling the floors, there is no possibility of the atmosphere being continuously in the requisite condition; it will be at one time too moist, at another too dry. A path running on each side of the house about 3½ feet in width should divide the side stages from the centre, which ought to consist of a brick-built pit 3 feet in depth, to be kept filled with tan. The side stages should be made of solid slabs of slate or thin flags, on which can be placed an inch or so of fine gravel, which can be kept damp when required, and will so maintain moisture amongst the plants standing thereon. If these side stages are made of open bars of wood-work, too great heat, arising from the close proximity to the pipes, will affect the plants. The distance these stages are from the glass not only adapts them for standing the smallest plants upon, but will admit of moderate-sized specimens on them. The largest growing subjects will, of course, occupy the centre of the house in such an arrangement as the above. In some cases, to make the most of the space, a shelf may be hung from the roof over each path; but with these there is this inseparable disadvantage—the light is intercepted from the other plants to a serious extent; consequently this counterbalances the gain, and the shelves are better absent. Of course, such an arrangement as this implies that all the plants are grown in pots or tubs.

At the present day some writers advocate the planting out of stove plants in preference to pot culture. This may do where a considerable portion of a house is devoted to the cultivation of some particular species or variety of plant, as with those who grow certain things in quantity for market; but, even where such is the case, it does away with the possibility of removing any portion for retarding or accelerating the blooming as may be found desirable. The system has also another and serious disadvantage, that it prevents the plants being moved, to be dipped or washed by syringing for the destruction of insects, which must necessarily be dealt with by hand, causing much greater expenditure of labour. Neither is there anything gained by planting out in this way, as the plants, if well managed, can be grown quite as well and as quickly in pots. In a house of large dimensions planting out may be resorted to with good effect, so far as appearance goes; but the inevitable consequences are that a few of the strongest growers destroy all the others, and when any plant is out-growing its neighbours, there is no means of remedying the evil without taking up and re-planting, which in many cases, when the plants have become large, means nothing less than their destruction. The position which the gardeners of this kingdom hold, so far in advance of those of any other country in the cultivation of plants, is owing to the great superiority they have attained in the individual culture of each and all of the immense number of species and varieties grown, and not to the appearance produced by a crowded arrangement for mere effect, such as is seen in Continental plant-houses, whereby the health and general character of nine-tenths of the plants grown are completely destroyed. Long may it be before plant-growing in this country is reduced to the production of an assemblage of starvelings that will not bear individual inspection. An arrangement equal in appearance to planting out may easily be effected by growing the plants in pots or tubs, and plunging them in a bed prepared for the purpose. In this way they have just the look of being planted out, with none of the objectionable consequences attached to that system; there is also the great advantage derived from the plunging, that the whole arrangement of the house can at any time be altered by a different distribution of the plants, that breaks the monotony of seeing them always in the same position. Where anything of this nature is carried out, it of course implies that the use of stages or centre pits is altogether dispensed with. There is one difficulty attending the cultivation of stove plants; this is the rapidity with which the worst species of insects increase on them. This arises from the warm, genial temperature so conducive to the development of insect life, especially scale and mealy bug. Where the latter exists in a collection of stove plants, it is impossible to grow many of the finest kinds to a size and condition that display their true character, except at serious expenditure of labour. Nothing less than the complete extinction of this pest should suffice; and all other insects ought never to be allowed to get to any considerable head. This is alike essential to the health and to the appearance of the plants, and to the reduction of the labour in the destruction of the pests. The soil required for growing stove plants should always, as applied to both peat and loam, be of a good description, containing plenty of fibre. This is necessary, as the amount of water requisite for the greater portion is such that decomposition of the vegetable matter contained in the soil is very rapid, which also necessitates the presence of sand in sufficient quantities amongst the soil to ensure porosity. In potting stove plants there is one point that should never be lost sight of; it is that the soil, before being used, ought always to be placed where it will become as warm as the temperature of the house in which the plants to be operated upon are grown. When the soil is used in a cold state it necessarily chills them, at a time when they are least able to bear it, when their roots have been more or less broken in the operation of potting. Most stove plants, on account of their rapid growth, need, when in an active state, a large quantity of water; some require to have the soil always kept somewhat moist; others, when at rest, want drying off, and should receive, for a considerable time, very little. At no season of the year, or under any conditions of the plants, ought water to be given in a cooler state than the temperature they require to be grown in; and all through the growing season it may, with very great advantage, be applied considerably warmer than the temperature of the house they occupy. Although the majority of flowering stove plants enjoy all the light it is possible to give them, yet many will not bear the full power of the sun; it consequently becomes necessary to resort to shading; but, this should always be of such a character as to be easily moved when not required, for, on no account should it be over the plants when the sun's rays are not sufficiently full upon the glass to require their partial interception. Fixed shading ought always to be avoided, however thin the material used may be; for when the sun is not on the glass, it obstructs light. When blinds on rollers are used, these should never be let down earlier in the day than needful, or remain on after they can be dispensed with in the afternoon. From the widely different conditions under which plants that are usually brought together in a stove exist naturally, it is obvious that any method of treatment that is not considerably varied to meet the requirements of particular species, is not calculated to ensure success. It is from the adoption of an insufficiently discriminate system of culture in the plants under notice that many who attempt their cultivation only partially succeed.

In the plants hereafter to be treated upon, I shall endeavour, as clearly as I am able, to point out the individual requirements of each species and variety, with the particular purpose to which they are best adapted, whether as roof climbers, trained pot specimens—large or small—for general decorative use on the home stage, as also for exhibition, if required.

T. Baines.

Gesnera cinnabarina for Winter Decoration.—Some fifteen years ago we had occasion to recommend this Gesnera as a most useful winter-flowering plant; and as an ornamental foliaged plant it is most effective up to the time of its blooming. We again referred to it recently as being very telling in combination with Caladium argyrites, all through the summer and autumn. It is to us a wonder that so charming a plant, and one so easily managed, is not more generally grown. A single bulb of it can be grown in a 6-inch pot, to a specimen 2 feet in diameter, and its orange-red flower-spikes are very striking, rising from its singularly rich and beautiful leaves. As a table plant associated or alternating with such as Azalea Iveryana in November and December, it is most effective, and candle light brightens up the richness of its foliage. It thrives best in a mixture of fibry peat, and in its early stages of growth it does not need very much water; but when the pots become full of roots it can scarcely be over-watered, for in a small pot it produces a great mass of leaves and bloom-spikes. Mixed on benches in the stove with light Calanthes or Eucharis, it is most effective.—"The Gardener."

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Roman Hyacinths.—We have now had for some time past fine potfuls of the white variety of this Hyacinth, which, when intermixed with Tulips, Heaths, Cinerarias, and, above all, with Epiphyllums, produce a pretty effect. The blue kind is not worth growing.—R. G.

Camellia Saccoi nova.—I find this Camellia, which is sometimes grown under the name of Augustina superba, to be an exceedingly free flowerer; its blooms, which are of medium size, are well formed, and of a delicate rose colour, and they are produced on the same plant for a long time in succession. —J. Muir.

Phalænopsis from Seed.—Will any correspondent of The Garden inform me if they have been successful in raising seedlings of these plants from seeds ripened in this country? They seed as freely as any plant either crossed with another variety or set with their own pollen, but the seed fails to germinate, although the seed-pods ripen off and burst open apparently quite mature. —J. G.

Begonia insignis for Winter Decoration.—This is one of the best of winter flowering Begonias. Cuttings of it struck in March, and grown on through the summer, in a temperature ranging from 60° to 70°, with an occasional application of Standen's manure, flower profusely during the dull months. The delicate pink flowers of this variety, mixed with blossoms of other shades, have a pleasing effect in the conservatory.—W. M. Stickland.

PLATE II.

NEW FALSE ACACIAS.

(ROBINIA PSEUDO-ACACIA.)

One of the most useful trees ever brought to Europe is the common False Acacia, now as well known as it is useful. Of all other trees it is the last to retain fresh green leaves in the streets of London, and it is the only tree that has been found to stand the blazing heat of summer in the streets of Constantinople. Old trees of the False Acacia in the parks and pleasure gardens of England, as, for example, at Pains Hill, have a singularly picturesque appearance. It is, however, too well known throughout Europe to render it necessary for us to add to the many writings already published concerning it. We desire rather to call attention to the remarkable new varieties of this fine tree now in cultivation. Of these, one of the most remarkable is A. Decaisneana, which we now figure, and which, as will be seen, is quite distinct from the species, as regards the beauty and colour of its flowers. It is a vigorous grower, with rather an open habit. For ordinary planting, perhaps, the best of all is A. Bessoniana, a kind with fine dark foliage, largely grown by Mr. Anthony Waterer, at Knaphill. It is a vigorous tree, with a rapid habit of growth. In addition to these, there are the weeping variety, called pendula, and also the weeping-leaved variety, named pendulifolia, both ornamental kinds; and, also, the large-leaved sort, called monolifera. There is, too, the very remarkable pyramidal variety, named pyramidalis, of which fine specimens may be seen growing by the sides of the flower walk in Kensington Gardens. This has the habit of a Lombardy Poplar, and is not nearly so much planted as it ought to be. Of these Acacias, MM. Simon-Louis, Frères, of Metz, have a remarkably fine collection, particulars of which we hope to furnish on some future occasion.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Sowing Peas.—In all parts of the country where the soil is not more than ordinarily cold and retentive, and consequently not adapted for producing early vegetables, some Peas should now be sown. This is necessary even where those sown in November look promising, inasmuch as should they fail a delay in the supply will be the result. Even where the ground is naturally dry, it is necessary at this early period to sow much shallower than later in the season, for if the seed is covered too deeply it is certain to perish, more or less, should severe and continued frost or much wet set in. The trenches ought not to be made above 2 inches in depth, and over the soil above the Peas put a couple of inches of coal ashes; this will not only protect the Peas from frost, but will prevent slugs from penetrating the ground and eating the young sprouts before they appear on the surface. Mice are also often troublesome in the case of early sown Peas, doing much mischief, in spite of all attempts at trapping them. As a precautionary measure nothing is more effectual than finely-chopped common Furze (Gorse) scattered about an inch in depth over the Peas in the trench and immediately in contact with them under the soil; through this mice will not burrow. For present sowing there is no better Pea than William the First, which should be sown in rows about 3 feet apart. This is certainly the most economical distance, inasmuch as it allows Spinach to be sown between the Peas later in the season. The Peas ought to be sown much thicker now than in spring, when they are less likely to rot. For this early sowing, if the land is of a damp character, it should be formed into ridges running east and west, 18 inches wide at the base and a foot wide in height; the Peas should be sown on the south side of these about half-way up, and covered as advised in the case of those in trenches. Thus treated the seed lies drier than it otherwise would do. In all cases the ground should be moderately rich, either by sowing after a crop that has been well manured, or by a special application for the Peas.

Broad Beans.—Where these are required an early sowing should also now be made; they succeed best in stiff soil, provided it is not wet; they are not an exhaustive crop, and consequently do not need very rich ground; they may, with advantage, follow any other vegetable that has been moderately manured last year. Sow, in double rows, 12 inches apart, the Beans being 6 inches asunder in the rows, with 2 feet spaces intervening. Cover the seed with about 2 inches of soil and an inch or two of ashes. The Early Long Pod is a good Bean for this sowing, and a free cropper. In localities where the land, even when well drained, is cold and late, it is better to defer sowing both Peas and Beans for some weeks yet, as, when the seed lies dormant long for want of sufficient heat in the soil to cause it to vegetate, it becomes weakened, and, under such conditions, more is lost than is gained by early sowing.

Radishes.—A bed of Radishes should now be sown, choosing a warm sunny corner for the purpose. For these the soil should be rich, as their quality is much improved by quick growth. In digging ground for Radishes, break the soil quite fine, and at this season sow moderately thick, as the plants, when necessary, can be thinned out afterwards; rake the seed evenly in, and then cover with half an inch of fine soil, such as old potting material or that used last summer in the Cucumber or Melon frames; over this place a couple of inches of litter, on which put some straight Pea sticks to prevent the straw being blown about. Early Frame or Short Top Radish is the best for present sowing.

Potatoes.—Amateurs who do not even possess a supply of hot manure, or other fermenting materials, wherewith to grow early Potatoes can by a little forethought have them quite a month sooner than they otherwise possibly could, by placing over them a slight inexpensive frame formed of inch-boards, protected overhead by bast or straw mats. A frame of this description 10 or 12 feet long, and 6 feet in breadth, will bring forward a quantity of Potatoes that will be found most acceptable before they come in from the open borders. For planting under such protections, select an early kind, such as Myatt's Ashleaf, Mona's Pride, or Hammersmith Kidney, all of which are both early and good kinds. They should be placed at once in a shallow box, 6 or 8 inches in depth, in the bottom of which should be put a couple of inches of fine soil. On this set the Potatoes, sprout end upwards, and fill the box, so as to keep them in position. Then place them under a greenhouse stage, where, if possible, they will get a little warmth; but where that is not available, place them in a warm room. A mat, or other covering, to exclude light, should be laid over them until they begin to grow; after which they should have plenty of light to keep the sprouts stout and strong. Thus treated, they will come on quicker than they otherwise would do; and in order to encourage the sprouting, occasionally sprinkle them with water, so as to make the soil a little damp. Some weeks hence, when the sprouts have got 2 or 3 inches long, they can be planted out. Potatoes, for planting in the open ground, should also be laid singly, where they will get plenty of light; for, if kept in the dark, the sprouts grow so long and weak that they are certain to get broken off at planting time, an occurrence which weakens them greatly, and retards their coming to maturity by several weeks. Any of the Kidneys just named, together with a few of some early round kinds, such as Early Handsworth or Early Oxford, to come in first, relying for the principal supply upon the yet unsurpassed Regents and a few of Paterson's Victoria for the latest after the Regents begin to get soft, will give more satisfaction than growing a host of varieties that have little to recommend them beyond novelty. All the Potatoes intended to be planted cannot be too soon got in, and treated as above advised. By planting early and second early kinds, properly prepared, for the principal supply, not only are the chances of securing sound crops increased, but an advantage is gained in getting the ground cleared for planting with winter vegetables, that will have time to grow to a useful size.

Planting Hedges.—If any hedges have yet to be planted, the work should not be longer deferred, as upon its early completion, in a great measure, depends the progress made in growth during the ensuing summer. In planting garden hedges, either for shelter or fences, the chief object is to get them up as quickly as possible; to ensure this, the first thing to be done is, if the land is wet, to put in a drain parallel with, and at a distance of 5 or 6 feet from where the hedge is to stand; the ground should then be well dug, and plenty of manure added. For a fence nothing is better than Quick Thorn, and for appearance nothing is superior to Holly. If Thorn is used, in selecting the plants, do not be guided by size so much as by an abundance of roots, which can only be had in the case of plants which have been transplanted whilst in the nursery, as often as they require it. Put the plants in double rows, 12 inches asunder, a foot apart in the row, and by no means be induced to follow the barbarous practice of cutting the heads off previous to planting, under the impression that time will thereby be gained. This kind of decapitation has the opposite effect, and that to a serious extent; let them grow for a season, and then head them down. Treated in this manner, at the end of three years they will be double the size of those beheaded before planting. To those who have not had experience in this sort of work it may be necessary to say that this cutting back is to induce the plants to make a bushy close bottom. Where Holly is planted the work should be deferred until April. There is no

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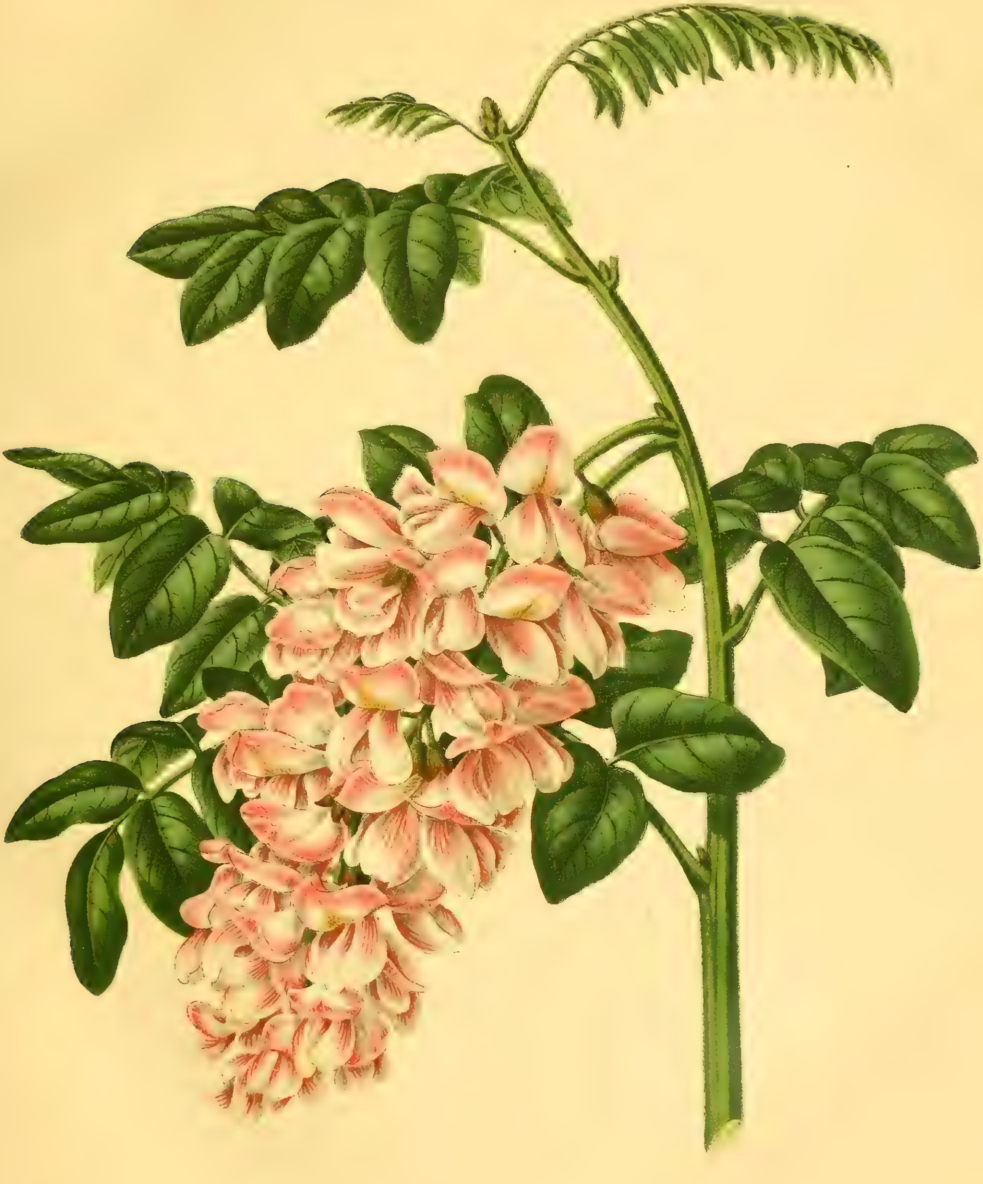


THE ROSY LOCUST TREE ROBINIA PSEUDACACIA DECAISNEANA.

worse time in the whole year for moving plants of this decription than the present. The distance apart at which Hollies for a hedge should be planted depends upon the size of the plants; when of the ordinary trade size, sold for such purposes, 15 or 18 inches will be the right distance asunder in a single row. When a hedge is required for a screen or for shelter, but not as a fence to turn cattle, there are few plants equal to the oval-leaved Privet, the rapidity of the growth of which in good rich soil is surprising. In five or six years, if well attended to, Privet will form a perfect hedge 7 or 8 feet in height. If required for dividing a kitchen garden from a pleasure ground or similar purpose, a Rose hedge is both appropriate and has a good effect when in bloom. Any strong-growing, free-flowering variety or, still better, varieties may be used; they should be on their own roots, the ground heavily manured, and planted at once.

Indoor Fruit Department.

Vines.—Vine eyes should now be put in, and they should be selected from the firmest looking upon the wood which has been saved. The thickest wood does not always produce the finest canes, and it frequently does not start into growth so freely as that of medium strength. For starting in pots, the eyes require to be made in a different manner from those intended for striking in beds of soil. In the first case the wood should be cut close above the bud, leaving 2 inches below it, the cut being made in a slanting direction about an inch in length, and a small notch should be made on the side of the wood opposite the bud. For placing in beds of soil the slant cut should be made at both ends, as the longest one has been for pot propagation; the wood should extend an inch and a-half each way from the bud, and both ends must be made slanting, a sharp knife being used in the operation, or the wood may be injured. Pots of the 4-inch size should be used; they should be quite clean and thoroughly drained with small crocks, and must be firmly filled with good fibrous loam, and no other ingredient should be used. Rich manure is not favourable to the production of healthy roots, and when used to any extent the soil has a tendency to become sour before root action begins. As each pot is filled a hole should be made in the centre with a dibble sufficiently large to admit the cutting, which should be pressed in with a little silver sand around it. The whole should then be watered through a fine rose, and allowed to remain on the potting bench, or some similar place until the time arrives for placing them in heat. Those intended for beds of soil cannot be placed there at present, but should be put into a mixture of loam and sand, and treated in a similar way to those in pots, when they will form a callus, and root freely after being transferred to their growing quarters.

Pines.—As the root soil of recently started Queens should now be damp enough to start the fruit, do not give much more water until it appears. The object of this is to get the fruit on before the plant grows too much, as a rank growth is often unfruitful. As the days lengthen give a little more air on every favourable opportunity to all Pines. Suckers in small pots, which will be re-potted in the course of a few weeks, may have the heat increased 5°, and be given a little more water at the root, that they may be in a slightly growing state when they are shifted.—J. MUIR.

Hardy Fruit.

Where summer pruning—that is, disbudding, pinching, or stopping the shoots—is regularly practised, little, if any, winter pruning is required. For established plants of most kinds of fruit summer pruning is the most natural way of inducing fruitfulness, as, by it, growths that would otherwise develop into gross shoots with wood buds only, are, by the check which they thus receive, made to form fruit buds; and, at the same time, the necessity to root-prune is reduced to a minimum. Unfortunately, however, for the full application of this principle of pruning, there are at that period so many operations claiming attention that time cannot be found to keep pace with the growth of the trees; where, therefore, such was the case last summer, let all pruning required be done forthwith, beginning with Apricots, as these are the earliest to flower. In pruning avoid all unnecessary amputation of large branches, and other injuries to the wood or bark, and remember that nothing is gained by laying in the shoots too thickly. Planting of every kind of hardy fruit trees should now be completed as soon as circumstances will permit, and the variety to be planted should be well considered. There are now so many good kinds, that it is not worth while to plant uncertain ones. When the ground is hard through frost, and planting is out of the question, soil for the purpose may be prepared, and wheeled into position, in readiness for use when favourable weather sets in. Stakes may also be cut for newly-planted trees; and any that are rotten, in the case of espalier-trained trees, may be renewed, *i.e.*, when proper espalier fences are not used. Manure may likewise be wheeled ready for mulching purposes. Strawberries should have the first attention in this respect, provided they were not mulched, as has been recommended, in the autumn. Orchard trees and Nuts may also furnish employment in bad weather, the former by clearing them of Lichen and Moss, and dressing the stem with quicklime or brine; the latter by removing suckers, and regulating the branches. Birds are already becoming troublesome; and, if not watched, and means of prevention adopted, they will soon relieve Pears, Plums, and Gooseberries of all their fruit buds.—W. WILDSMITH, *Heckfield.*

Conservatory.

Except for the purpose of expelling damp, very little fire heat will be necessary while the weather remains in its present mild state. Should fogs or wet prevail so as to cause a moist state of the atmosphere, a little air should be admitted by the ventilators while the fires are going, so that any excess of moisture inside the house may be driven out instead of condensing on the flowers. Any superfluous growth in the roof climbers should be at once cut out, so that all the light possible may be admitted at this dull season. Fresh plants should be admitted as others go out of bloom, and occasionally an entire re-arrangement should be effected, so as to give fresh interest. This may sometimes be desirable even while the house is still gay, as plants, seen under the same conditions day after day, soon cease to be as attractive as they were at first. Richardias are exceedingly useful at this season; and, by introducing a few into heat as occasion requires, a regular succession of their highly esteemed flowers may readily be kept up till quite late in the spring. A few plants of these always produce a very pleasing effect when placed amongst others, so as to allow their stately foliage and flowers to stand prominently out. Where sweet-scented flowers are prized, Heliotrope is sure to be in request. Any old plants that were saved in the autumn may be soon had in bloom by subjecting them to a gentle heat of from from 50° to 60°. In doing so they should be kept well up to the glass, so as to enjoy every ray of light, or the flowers will be defective both in colour and form. Mignonette is a special favourite at all seasons, and particularly so just now; a dry atmosphere, a temperature of about 45°, with plenty of light and air, will ensure having this in the greatest state of perfection all through the winter. See that it does not become dry at the roots or the under leaves soon turn yellow. On the other hand, it must not be kept too wet, as it is very impatient of excess of moisture and soon dies off. Clear soot water is the best stimulant for this plant, and imparts a healthy deep green tinge to the foliage. Any in bloom or approaching that period of its growth will be greatly benefited by an application of this whenever watering is necessary. In the greenhouse, Azaleas, Acacias, Epacrises, and other plants subject to thrips or scale should now be looked over, and receive a thorough cleansing. For scale, a solution of Gishurst's or Fowler's insecticide, in the proportion of from 4 to 6 ounces to a gallon of water, will be necessary. Where many plants require the application of this solution, a sufficient quantity should be made, so that the heads of the plants may be immersed, after which they should be laid on their sides to drain, care being taken, at the same time, that none of the solution is allowed to soak into the soil round the collar of the plant. Thrips is the most troublesome insect to Azaleas, and, if allowed to get established, it soon cripples the plants, and renders it difficult to get them into a satisfactory condition afterwards. It is almost useless attempting to reach these by fumigating, as they are securely hidden around the flower buds and under cover of the close-lying leaves that enfold them. Even if it were possible to reach them with tobacco smoke their eggs would be uninjured by its fumes, and these, hatching in the spring, would soon re-stock the plant. This being the case, several dippings in strong tobacco-water will be found the most effectual. A pound of tobacco soaked in 2 gallons of boiling water to which 4 ounces of Gishurst's or Fowler's insecticide has been added, will make a wash sufficiently strong for the purpose. By holding the heads of the plants over a large tub while they are being syringed with the liquid, the greater portion of it will be caught, so that it can be used several times over. In this way a large number of plants can be wetted without much expense being incurred. See that every leaf is reached by the liquid, and then leave the plant to drain, so that it does not run into the soil. Repeat the wetting at the end of a week or so to ensure a thorough cleaning.—J. SHEPPARD.

Stove Ferns.

At this season of the year most of the fronds of stove Ferns are in a thoroughly mature state; and, consequently, in a better condition to withstand the effects of fumigation or the application of any insecticide that may be found necessary to rid them of scale, to which, unfortunately, some of them are rather subject. This is especially the case if any of the varieties happen to be in a higher temperature than they require. Thrips generally attacks the broad-leaved varieties, such as the Neottopteris Nidus, Blechnums, Lomarias, and others of that class; and, if allowed to effect a lodgement, they soon cause a good deal of disfigurement, that cannot be effaced till a fresh growth takes place and admits of the old fronds being removed. Therefore, the whole stock should now be looked closely over to see if any are at all infested by these pests, and, if so, they should at once be fumigated, the same operation being repeated at intervals of a few days till the insects are completely destroyed. Many of the more tender varieties are easily injured by tobacco smoke, and, therefore, any that are clean and do not require to be subjected to it, should be removed from the house. Adiantums, perhaps more than any other plants, are most susceptible of injury in this way; and, as they are rarely attacked by thrips, it is seldom necessary to run any risk by allowing them to remain with the others while fumigation is going on. The turtle or brown scale is the most troublesome insect to which Ferns are liable, and nothing but careful hand-washing with a sponge and suitable brush will be found at all effectual, as any insecticide solution made strong enough to destroy the scale by dipping the plants would, in all probability, kill or injure the fronds. Keep all quiet and resting for some time longer by having the temperature within bounds, ranging from 50° to 60°, according to the state of the weather. Very little atmospheric moisture will be sufficient just now, and this may be got by damping the floor and other cold surfaces, but avoid steaming the pipes. Tree Ferns that are getting too high and push their fronds against the roof, or that are too redundant in growth to be confined to the spaces allotted to them, may, with safety, have their stems shortened to the desired height, and a portion of their old fronds cut off, which will greatly check any tendency to strong growth for the next year at least. Where it may be found desirable to shorten the stems a few of the old fronds should be removed at the same time; and, after the trunk is again re-planted, both it and the remaining fronds should be kept well syringed. Should the trunks not have made plenty of roots round their sides, it may be necessary in some cases to bind them up with Moss to induce them to do so.

Greenhouse and Half-hardy Ferns.

Many of the remarks made with regard to the stove varieties, as to insects, cleaning, fumigating, &c., are applicable to these also. Most of the viviparous varieties will be found to be carrying numbers of minute plants on their fronds. These may now be taken off and placed in pots in a close moist place, where they will soon emit roots, and form fine plants. Woodwardia radicans bears a plant at the end of almost every frond, and although these may not be required for indoor cultivation, the whole should be saved, as it is one of the grandest Ferns it is possible to have for planting in the hardy Fernery, where it stands well with only slight protection. Little remains to be done in the hardy Fernery just at present beyond seeing that all of doubtful hardiness have the necessary protection to carry them safely through the winter. This is most readily afforded by a thick layer of fresh fallen leaves, such as Oak, that will lay and keep well together. An evergreen branch or two, or some dry Fern fronds will ensure this. Planting, except for the very strong and robust kinds, had better be deferred for the present, and even these may with advantage be left till March.

The Hardy Fernery.

The site for this should be well sheltered, both from winds and sunshine. A dell, hill side, or sloping bank, dipping to the north, north-east, or north-west, affords the best situation, and, if overshadowed by deciduous trees, standing at a distance, so that their roots do not intrude and rob the soil of its moisture, the spot will, in every way be favourable to grow any of the hardy Ferns to perfection. Anything approaching to rock-work had better be avoided, unless it can be well carried out, as any attempt to imitate Nature, without incurring considerable cost, must have a very puerile appearance, and end in utter failure. If rock or stone-work is used at all, it should be in the shape of huge boulders, jutting out here and there, that they may have the appearance of cropping up naturally. Stones piled up are not rock-work, nor in any way an imitation of it, and, unless for the purpose of burying up, so as to add to the moisture and help to keep the irregular-shaped mounds or steep banks in position, they had better be left out altogether than be used in an objectionable way. Where a hill side having the proper aspect is not available, large irregular cuttings should be made, and the soil that has to be thrown out can be used on each side, to give increased height to the banks, which should be as broken and rugged as possible. For the sides to maintain their position, the inclination of the soil must not be too steep, and any stones buried may be made of use to prevent it slipping. In making the cuttings so as to form the various banks and mounds, they should be made of great width, so as to leave plenty of room to face all over with a good thickness of suitable soil in which to grow the Ferns. Taking into consideration the space required for these to grow and spread their gracefully-arching fronds, and the depth of good soil necessary to grow them to perfection, the width of the cutting at the base should be at least from 10 to 15 feet. If water is not present, it may be introduced or brought as near as possible, for without abundant supplies of this during dry weather they will not long maintain that luxuriant growth, or remain in the fresh, healthy condition for which Ferns are so much admired. The soil most suitable for hardy Ferns is a good yellow loam, such as may be obtained by digging the top spit of any old pasture. To this add a third of good peat, leaf soil, trimmings of banks, or any gatherings of that kind that are rich in vegetable matter.

Halls and Corridors.—Select for situations of this kind any plants of bold type, having thick leathery leaves, such as Aralia Sieboldii, Ficus elastica, Aspidistra lurida and its variegated variety. The beautiful silvery green and handsomely cut leaves of the Melianthus major, render that one of the most valuable plants for associating with those mentioned above. Large plants of Echeveria metallica, with their glaucous rigid looking leaves, are very suitable for decorating halls and corridors, as the absence of light, and the dry atmosphere of such situations has but little effect on them, unless kept there an unreasonable time.—S. W. P.

Floral Decorations.

To those who have stove and greenhouses from which to cull, and to those who have access to Covent Garden Market, and have the means wherewith to purchase what they fancy, the following lists will be of little service. There must, however, be very many readers of The Garden who are denied such privileges as these, and who are obliged to leave it to others to select for them, or who have to write out a list of their wishes, which they may often do without feeling at all sure that they can have what they propose to ask for. To them it will be serviceable to have the opportunity of referring to the first number in each month of this paper, wherein they will find lists of the principal flowers and coloured fruits which are obtainable during that month for decorative purposes. It is believed that the usefulness of these lists will be much enhanced by classifying the flowers and fruits according to their colours; so that either contrasts or harmonies may be carried out at pleasure, whether it be for vases, bouquets, head-dresses, or any other application of flowers ornamentally. It must not be supposed that these lists have any pretensions to completeness—many rare flowers, such as Orchids, are yearly becoming commoner; some common flowers, particularly annuals, such as Nemophila, Mignonette, Rhodanthe, &c., are often to be met with at unseasonable periods; to these no reference is made because a supply of them cannot be depended upon. Notwithstanding these omissions, there will, I think, be found sufficient variety, even in the winter months, to prevent anyone in future from asserting that there is "nothing to be had." It should not be forgotten that some of the prettiest arrangements are made out of "nothing," *i.e.*, "nothing particular." The following are procurable in January:—

Blue—Hyacinth and Siberian Squill.
Purple— Heliotrope, Hyacinth, and Violet.
Mauve—Heath and Tulip.
Pink—Begonia, Bouvardia, Camellia, Carnation, Chinese Primrose, Cyclamen, Epiphyllum, Fuchsia, Heath, Hyacinth, Rose, Tulip, and Zonal Pelargonium (single and double).
Crimson—Camellia, Cyclamen, Epiphyllum, Fuchsia, Hyacinth, Poinsettia, and Rose.
Scarlet—Bouvardia, Carnation, Fuchsia, Tulip, Zonal Pelargonium (single and double), berries of Cotoneaster, Holly, Solanum capsicastrum, and Euphorbia jacquiniæflora.
Orange—Carnation, Rose, and Tulip.
Yellow—Carnation, Rose, and Tulip.
White—Andromeda, Azalea, Bouvardia, Camellia, Carnation, Chinese Primrose, Cyclamen, Eucharis, Gardenia, Heath, Hyacinth, Irish Heath, Lilac, Lily of the Valley, Paper-white Narcissus, Roman Hyacinth, and Stephanotis.

—W. T. T.

Market Gardening.

Out-door operations must necessarily depend at this time of the year upon the weather. The main point to be kept in view is to be always ready to take advantage of favourable opportunities, endeavouring, as much as possible, to make work and weather harmonise. Nothing is to be gained by setting men to any kind of work that entails unnecessary exposure and discomfort to them, for the time spent in attempting to beat warmth into the chilled body and benumbed fingers will always be more profitably employed by a good manager. To set men to such work as pruning, nailing, &c., in very cold weather can only result in dissatisfaction to the men and loss to the employer; but, with proper management, no time need be lost—wet, snowy, or dry frosty weather may all be utilised. Wet days should be provided against by always having indoor work ready for men to go to, and much of the outside labour may be forwarded under cover; it makes a vast difference in the amount of work to be done on fine days, when materials of all descriptions are ready to hand, properly prepared for use. Large stakes, for the support of young fruit trees, of which some are certain to be displaced by the winter storms, and sticks of various sizes should be cut and tied up in bundles, with a proper supply of tar string, twine, wire, &c. The French employ a great quantity of lead wire, which is very convenient to use, being pliable and easily broken between the finger and thumb. Labels of all kinds, both for inserting in the ground and for hanging on trees, should be made and painted, the latter wired, as twine soon rots. If clay is employed for grafting, a portion may be got in and prepared, as it can hardly be too much beaten. Putty should be made, for glass is sure to get broken in covering, and nothing looks more deplorable than rows of frames with shattered panes, which allow the heat to escape and moisture to enter. Seed Potatoes should be frequently looked over; those who have convenience for laying them out thinly in a dry, light, airy place, have the advantage of not being obliged to plant quite so early. Short, green, spur-like shoots, with the rudimentary roots being formed, and ready to grow as soon as set are best. Kidney Potatoes are much benefited by this treatment; there will be no blanks, and they come up much stronger if this system is followed. If covering is required for frames, straw mats should be made, a supply of hand-threshed rye-straw being in readiness; a good straw-mat will keep out 15° degrees of frost, is quickly put on and removed, and, with proper care, will last several years. I find that the materials cost about a halfpenny the square foot; women and boys can make them, and if constructed like the French paillassons, they have an extremely neat appearance. I should like to see them much more extensively employed in this country than they are. A general review of the seed stock should be held, the amount of each kind required calculated as nearly as possible, and where any deficiency occurs the needful supply should be at once laid in. Small seeds should be carefully cleaned, neatly put up, plainly labelled, and all put away carefully, but so as to be found at a moment's notice. Let tools of all kinds be looked to, and where any repairs are required, they should be done at once. Water-pots should be painted inside with a thin coat of red lead, and the bottoms outside coated with a mixture of tar and pitch or varnish. Take advantage of dry frosty days for carting and wheeling manure, trenching, and digging. Trenching is always better done then than in wet weather, when the top spit often becomes trodden into hard lumps. Strawberry plantations that have not been dressed should be forthwith operated upon; worms and the rain will work the manure well in before the approach of spring. All spare pieces of ground should be thrown up well into ridges, and the larger the lumps the more thoroughly sweetened will it become. Old fruit trees ought to be looked to, the moss cleaned off, old wood cut out, and the younger subjects judiciously thinned. Young plantations will also require some supervision, and all kind of pruning should be finished as soon as possible. Put rubbish of all descriptions together to decay, and have old compost heaps turned over in frosty weather. Lettuces and Cauliflowers in frames need constant care and plenty of air, dry ashes or sand being dredged upon the soil to keep down damp. Some boxes of Lettuce may be sown in gentle heat to be afterwards pricked off. This sowing is often found extremely useful. Select the dryest and most sheltered situations for Peas, Beans, and early Radishes, paying especial attention to the covering of the latter during the earlier stages of their growth; with care, this crop may be made very profitable if a little extra time and labour be expended on it.—JOHN CORNHILL, *Byfleet.*

Church Decoration.—Allow me to acknowledge the assistance and benefit which I have derived from Miss Hassard's excellent hints in reference to "Church Decorations at Christmas." One fine old church at Whalley, in Lancashire, has a venerable history; portions of the present edifice date from the fourteenth and fifteenth centuries; the arches of the nave are in the decorated style of architecture, the under portion of the span being flat. For these we adopted Miss Hassard's suggestions of bands of wood covered with scarlet, and Holly rosettes and red berries placed at equal distances. In the recesses at the base of the chancel windows we put fresh Moss, and, in the centre of each, tins of different designs containing natural flowers and Ferns; these have been much admired, appearing, as they did, behind the dark Oak stalls of beautiful "perpendicular" work, the latter having been removed from the adjoining Abbey when the Conventual Church was destroyed.—M. L. W.

THE FRUIT GARDEN.

RESTRICTION *v.* EXTENSION OF FRUIT TREES.

ON a dry bottom, with a good depth of suitable soil, and favoured as regards shelter, fruit trees of all kinds may be allowed to extend themselves with advantage. There is, and must always be, an evenly maintained balance between root and branches. If the roots are growing in a cold wet soil, its effect is soon seen in the shape of watery unripe wood. On the same principle, anything that checks the growth of the branches, such as attacks of insects, or extreme exposure to cold cutting winds, reacts prejudicially upon the action of the roots. I remember, some years ago, that a very thriving orchard was completely ruined by cutting down a belt of trees, in order to open up a vista. The cold wind being let in checked growth, chilled and destroyed the blossoms, and, one by one, the trees actually perished, and had to be removed. This may be an extreme case; but in some districts, shelter is absolutely necessary for the attainment of success in fruit culture. Under favourable circumstances, as to soil, climate, and shelter, the fruit grower's difficulties are reduced to a minimum; and any cultivator who has spent most of his time under such conditions, and noted the advantages of a natural system of management, may well be excused if he looks upon all forms of restriction as barbarous. Whilst the cultivator who has been all his life battling with adverse circumstances comes to the conclusion that a system of restriction is the very perfection of fruit culture, errs in the opposite direction. There is, however, no doubt that, under favourable circumstances, very profitable results in the culture of all kinds of fruits have been obtained by allowing the trees full and free development. In the case of Vines, Figs, and other kinds of fruits, I have often noticed the advantages of allowing a healthy, vigorous tree to extend itself, even if, by so doing, it was necessary to remove a weaker neighbour. This, in fact, under the conditions I have named, is only giving effect to an acknowledged law of Nature, which secures the survival of the fittest to fill the place. On the other hand, however, in the case of soils not so favourable for fruit culture, it has been found necessary to adopt a modified form of restriction by using dwarfing stocks for grafting on, by root-pruning, and by a close attention to summer pinching, and I am of opinion that this latter process is deserving of far more attention than it generally receives. That it is sometimes carried too far I will not deny; but it is far oftener too little attended to. In summer pinching, the age and condition of the trees should be first considered; if a vigorous young tree is pinched in too closely, there will be no fruit, as the back eyes will break into growth, instead of maturing blossom buds. To successfully manage fruit trees on the restrictive principle requires more skill and a higher order of intelligence—if I may so express it—than when growth is allowed to go on in a more natural manner. The truth is, that under any system of restriction the conditions of growth are more artificial than under other circumstances; increased care and attention are, therefore, required, in order to maintain an exact balance between roots and branches, without having much recourse to the pruning knife; keep the wood properly thinned out and pinched back, according to the strength and vigour of the tree, and expose, in fact, every leaf to the influence of sun and air. This will thoroughly mature the buds, lay the foundation of fruitfulness, and, at the same time, make far less demand upon the roots than when multitudes of soft shoots are allowed to grow. When fruit trees are allowed to produce quantities of soft, useless wood, useless at least as far as fruit-bearing is concerned, the roots, unable to find the necessary supply of moisture near the surface are compelled to descend to a lower stratum for it, and then, in order to rectify this evil, it becomes necessary to have recourse to root-pruning. If summer pinching could be more sedulously attended to there would be less root-pruning required.

Ramsey Abbey. E. HOBDAY.

The King Pine-apple.—An old Pine grower (see p. 507, Vol. VIII.) asks for information regarding the old King Pine. In the "Transactions of the Horticultural Society," second series, Vol. I., p. 7, I find it described as a smooth-leaved variety with green wavy leaves entirely free from mealiness. This Pine, according to Martin, in his edition of "Miller's Dictionary," was raised from seeds taken out of a rotten fruit, which came from the West Indies to Mr. Henry Heathcote. It is a very handsome fruit, of middle size, and generally weighs from 3 lbs. to 4 lbs., but is rather tardy in fruiting. The Pine-apple is a far more variable fruit than is generally imagined, and fifty-two varieties are described as distinct in the volume above cited.—B.

GRAPES COLOURING BADLY.

"K. K." (see p. 538, Vol. VIII.) will find that widening his Vine-borders and leaving his tap-roots in the sub-soil will be of little or no benefit to his Vines, and that if they are not worth cultivating properly they are not worth any trouble at all. Your correspondent should procure some good fibrous turf—if of a calcareous character, all the better—first mowing the Grass off close, and if the turf is in a dry state it should be used at once chopped up roughly, and mixed freely with refuse brick that has been broken up to the size of ordinary road metal. If oyster shells are obtainable, burn them, and they may then be used instead of bricks. When the material is ready, commence at the front of the border, removing all the soil with a fork, to the depth of the border, but taking care to preserve the whole of the roots, except those running into the sub-soil, which should be cut off, as low down as convenient, tying the others against the front of the Vinery, protected with damp litter and mats. Then prepare the site for the bottom of the border, allowing a gradient from the Vinery to the extremity of 1 inch in a foot, and cover the site over with 4 inches of concrete. A main drain, running parallel with the border at the front and 9 inches below the concrete, should be cut, and, at right angles across the border lines of 2-inch drain tiles should be placed 6 feet apart, filling carefully in between with refuse brick or stone. This will ensure perfect drainage, and carry off heavy rains or the water from overflowing spouts. Cover over the drainage with turf, with the grassy side down, and make up with the chopped turf to the depth of 3 feet close to the Vinery, making solid, and allowing a good incline to the front, to admit of top-dressing, when required. Damaged portions of the roots should be cut off in a slanting direction, spreading out the rest straight, covering them with not more than 2 inches of soil, and the entire surface with 8 inches of fresh litter, laying wooden shutters over this. The border is thus protected from heavy rain and snow, and a gentle heat, produced from the decomposition of the green turf, which is congenial to the well-being of the roots, and prevents the Vines suffering from any check. All manure should be applied on the surface, the rain carrying it down by degrees, the border being thus kept in a sweet and healthy condition, and the Vines in a good bearing state for many years.

Waterdale. JAMES SMITH.

"K. K." (see p. 538, Vol. VIII.) need not expect his Grapes to colour or ripen in perfection, so long as the tap and other roots are in bad soil. Had the border been rightly constructed at first with a layer of concrete at the bottom, the roots would not have got down into harm's way. As it is likely that there will be many roots emitted in the good material close to the surface which has been added, these should not be disturbed, if possible; but the tap root should be got at by digging a hole 2 or 3 feet from the stem, and tunnelling into it, when it should be cut at 2 feet from the surface, for the entire border could not be overhauled without destroying a great many roots, and giving a severe check to the Vines. Black Hamburghs frequently colour badly, from being overcropped; but, although lacking colour, they are often very sweet. Vines derive very little benefit from oyster shells in any form, and scallop-shells are no better; where the soil is very retentive, they help to keep it open; but, for this purpose they are no more effectual than small brick-bats or lime scraps. Half-inch bones may be used with greater advantage in Vine border compost than any other kind of material; half-a-hundredweight of them should be added to every cart-load of soil. J. M.

NUTS AND NUT CULTURE.

To Mr. Webb, of Calcot, we are indebted for several improved varieties of Nuts, called Webb's Prize Cob Filberts, specimens of which we have seen, and know to be excellent. In a little pamphlet, published by Mr. Webb, in reference to Nut culture, he says:—Finding the demand for Cob Filberts increasing, in 1855 I planted all the ground I had (10 acres) with them, in the following manner:—I put my trees in squares, 8 feet 3 inches apart, and therefore it took 640 trees to plant an acre; now as my trees were getting to a good size, I planted Potatoes between them, and had a good crop on the same ground for seven years in succession, and only manured once since the first planting, and over these I have Apple, Pear, and Plum trees, all in bearing order. Now if the 640 trees annually bear Nuts to the value of 1s. each, the amount will be £32 per acre per annum, and if they should produce to the value of 10s. each tree, it would bring in the almost fabulous return of £320 per acre. It is not, however, too much to suppose they will yield even more than that; and, as a proof of this, I had six people employed for a quarter of a day gathering the Nuts off one tree, and they were all witnesses to the weight, 110 lbs. of Cobs Nuts. Looking, then, at the price obtained in the market—always a sure one—and at the fact that they are certain bearers six years out of seven—I am of opinion that no crop can be planted which will yield so much money per acre. Let any man purchase 20 acres of land (for it should be freehold) at £100 per acre, and plant it with Cob Filberts; in seven years, it will be worth £1,000 a year to rent—to purchase, ten times the original cost. So certain am I of the correctness of this statement, that I have planted all the ground I have with these trees. Another circumstance is that these trees will grow on every soil, so that much of the waste land about Chobham and its neighbourhood would be a very profitable investment to purchase and plant. Some people are afraid of the expense, but they should, I think, also look at the returns, which are more than cent per cent., and the value goes on increasing year after year. If in America, an enterprising man were to get the grant of 1,000 acres, and at once clear and plant it with Cob Filberts, he would find it one of the most remunerative transactions of his life—their transit to this market is easy, and they are not injured from being two or three months in tubs, a circumstance which renders them as easy of carriage by land or sea, as flour. In Wales again, a quantity of waste land might be turned to good account if planted in this way; many parts also of Ireland and Scotland would be well adapted for such plantations if people could be found who would try; pay it would and that wonderfully well. The only drawback is the time you have to wait for the return, but even this is more than compensated for by the other crops grown on the land for the five or six years you have to wait, so that no time is lost. I say again, no investment can prove half so remunerative on almost every soil. I shall be happy to show my plantation to anyone who may wish to see it, and also to give any information I may possess on the subject. The land should, of course, be once dug every year, for the first seven years, and kept clean by hoeing, which will increase the fruitfulness of the plants, as well as their growth.

Particulars of Produce.

As regards the Cob Filberts, which constitute the foundation of these calculations, they have become a very profitable speculation, and to prove the fact I will now state the result obtained from parts of my plantation, which will be quite sufficient for our present purpose. Early in September we commenced gathering, and from half an acre of ground we had 1,300 lbs. of Cob Filberts, and also upon another three-quarters of an acre 1,700 lbs., besides Apples, Pears, and Potatoes, above and beneath. Let us first look at the value of the produce upon the half-acre where we began, viz.:

1,300 lbs. Cob Filberts, sold at £7 per 100 lbs.	£91	0	0
40 Bushels Apples	20	0	0
Potatoes	7	10	0
	£118	10	0

This return is equivalent to £237 per acre. Again, the 1,700 lbs. on three-quarters of an acre, planted with Cob Filberts, actually sold at £7 per 100 lbs., and some at £7 10s. Let us, however, say

£7 per 100 lbs.	£119	0	0
50 Bushels Apples 20 ,, Pears	35	0	0
Potatoes	5	0	0
	£159	0	0
Add one quarter more for the remaining quarter of an acre	39	15	0
Return per acre	£198	15	0

I think, therefore, after many years' experience, that I am justified in anticipating what I have stated, that from £200 to £300 per acre may be easily realised in growing Cob Filberts and other Nuts of the best quality. I have left off digging between the trees for Potatoes, and now plant them on the top of the ground and draw the mould over them with a hoe; after being planted ten years in succession, I think my Cob Filberts will pay quite well enough without their assistance. R. W.

Three Good Christmas Pears.—The three varieties of Pears in use here now (December 25th) are Passe Colmar, Eyewood, and Ne Plus Meuris, all of which are most excellent, Eyewood being, perhaps, the richest in flavour. Glou Morceau and Easter Beurré are fast approaching maturity. These two feast the eye as well as the palate.—R. GILBERT, *Burghley*.

TREES AND SHRUBS.

THE JASMINES.

The genus Jasmine or Jessamine comprises a large number of evergreen, sub-evergreen, and deciduous shrubs, chiefly of a scandent habit of growth, natives of the south of Europe, many parts of Asia, and Africa. They are all very ornamental, and well worthy of cultivation for their handsome foliage, and beautiful, exquisitely fragrant flowers. From some of the species, particularly J. officinale, the well-known white Jasmine, a fragrant essential oil, is obtained in sufficient quantity to form an important article of commerce. Of the many known species, a very small proportion are sufficiently hardy for our climate in the open air; some, indeed, will only thrive in the stove; while the great majority require to be treated as ordinary greenhouse plants. There are several, however—and these not the least interesting and attractive—which may be classed among the hardiest of our ornamental shrubs; and of such we note the most distinct and desirable.

The Shrubby Jasmine (J. fruticans).—This species differs from most of its congeners in having a shrubby rather than a scandent habit of growth. It is an evergreen, or in severe winters a sub-evergreen, growing about 10 feet high, indigenous to a wide area in the south of Europe, and introduced to Britain about 1570. The leaves are trifoliate, the leaflets of an obtuse obovate form, arranged on the shoots alternately, and of a bright glossy green colour. The flowers, which, under ordinary circumstances, are produced very abundantly in June and July, are bright yellow, and borne in peduncles at the points of the branches. In our shrubberies it is a dense irregular bush, with numerous suckers from the root. When these, however, are regularly removed, and the plant is trained to a single stem, it forms a neat symmetrical specimen, well suited for a lawn or prominent position in the shrubbery border. From its liability to suffer damage from severe frosts, this fine plant should be planted in a sheltered situation. In the colder districts it is most commonly planted as a wall-shrub; and as such it has a pretty effect, rarely losing its leaves in winter, but growing luxuriantly and flowering freely year after year. It thrives best in a deep rich soil, and in a situation open to the sun.

The Naked-flowered Jasmine (Jasminum nudiflorum).

The Naked-flowered Jasmine (J. nudiflorum).—This is a distinct and very interesting species, with a trailing habit of growth, the stems from 10 to 12 feet long, slender, very numerous, and much divided into small twiggy branches. It was first introduced in 1844 from the north of China, where it is not only found abundantly in a wild state, but extensively cultivated as a wall and verandah plant. In the warmer parts of China, and when cultivated in this country under glass, it is sub-evergreen, but is invariably deciduous in the open air. The leaves are trifoliate, the leaflets bluntly ovate, small individually, but very numerous, and of a deep glossy green colour. The flowers are large, bright yellow, and borne in great profusion along the sides of the young shoots. In mild seasons this fine shrub begins to develop its showy blossoms so early as December, occasionally much earlier; but the usual time is from the beginning till the end of January, the flowers continuing to expand for nearly a month. When in full bloom it is a beautiful object—the grassy green but leafless branches contrasting pleasingly with the Primrose-like blossoms, which are all the more appreciated from their appearing at that dead season, when, out-of-doors at least, there is an almost entire absence of floral beauty. Since its introduction it has been extensively employed for covering walls, for which its free-growing rambling habit renders it peculiarly adapted; and being very hardy, it is equally valuable for planting on bowers or trellis screens. It should always have a warm sunny aspect, and prefers a rich deep soil. Of this species a variegated form is in cultivation, and known as aurea variegata. It is a prettry plant, and well worth cultivating for its leaves, which are prominently edged with bright yellow.

The Common Jasmine (J. officinale).—This grand old-fashioned plant is said to be indigenous to various countries in the south of Asia, and, according to some authors, has been in cultivation in Britain for nearly 300 years. It is a robust growing sub-evergreen, with numerous slender stems, attaining lengths of from 20 to 30 feet, and frequently making growths of above 6 feet in a single season. The leaves are bright green, pinnate, with from five to nine ovate sharp-pointed leaflets—the terminal one much longer than the others. The flowers are produced in corymbs at the points of the young shoots from June to August; they are pure waxy white, and deliciously scented. Of this well-known and highly valued shrub it is scarcely necessary to say, apart altogether from its beautiful fragrant flowers, which render its presence always acceptable, that it is one of the handsomest and most useful in cultivation for clothing lofty walls, bowers, or verandahs, as it is perfectly hardy, and also grows with the greatest luxuriance in almost every situation and in every variety of garden soil. The flowers are, however, most freely produced when it is planted in a dry soil, and in an aspect fully open to the sun. Among varieties, of which there are several to be met with in collections, the most desirable is aurea variegata, the leaves of which are blotched or margined with bright yellow. It is not nearly so robust in its growth as the parent, and is somewhat susceptible to injury from frost. It is found to succeed, however, in the milder districts on walls, but is more frequently cultivated as a greenhouse climber, and as such it is very effective.

The Curled-flowered Jasmine (J. revolutum).—Found wild over a wide area in northern Hindostan and Nepal, chiefly in high mountain valleys, forming a rambling sub-evergreen shrub of from 10 to 20 feet in height. It has been cultivated in British gardens since 1812. The leaves are pinnate, with from five to seven leaflets of a dark glossy green colour. The flowers are bright yellow, very fragrant, and borne in corymbs from the points of the young branches. They begin to expand about the end of May, and continue in more or less perfection till October. It is a remarkably free-growing wall shrub, quite hardy in most localities, and so attractive in foliage and flowers as to render it very desirable for the ornamentation of garden walls, or other buildings where a really handsome shrub is required. In severe winters it frequently casts its leaves entirely, but in most cases a considerable portion of them remain on till the return of the growing season. It succeeds well in any ordinary garden soil if moderately rich, and to secure a plentiful display of bloom, it should always be planted in a warm sunny aspect.

Dr. Wallich's Jasmine (J. Wallichianum).—This is sometimes called pubigerum, but it is now best known under this name, which was applied to it in compliment to Dr. Wallich. Like the preceding, it is found wild in various parts of northern India, whence it was first introduced in 1827. It grows to similar heights as J. revolutum, and otherwise so closely resembles that sort as to justify the suggestion of some writers that it is probably only a variety, and not entitled to be ranked as a distinct species. It is, however, very distinct—the habit of growth being more dense, the shoots more slender, and both flowers and leaves smaller, than those of that species. The leaves are pinnate, with from seven to nine leaflets of a dark-green colour. The flowers are bright yellow, and are generally produced very profusely from June till October. Like all the other Jasmines, it is a grand wall plant, quite hardy, and of easy culture in any kind of rich soil, and flowers best in a sunny aspect.—"The Gardener."

Cedrela sinensis.—Mr. Ellacombe asks whether Cedrela sinensis and some other north Chinese plants are in cultivation? According to the "Revue Horticole," Cedrela sinensis is in cultivation in France. It is quite hardy in Paris, where there is a tree, in the Jardin des Plantes, 25 feet high. M. Carrière at first supposed it to be a new species of Ailantus, and described it under the name of A. flavescens. Subsequently he identified it with Jussieu's Cedrela sinensis.—W. B. H.

THE KITCHEN GARDEN.

LORD CATHCART'S POTATO COMPETITION.

The following is Mr. Carruthers' report on the results of the competition of 1874 for the society's prizes for Potatoes that should be free from diseae for three years in succession :—The ignorance prevailing in regard to the true nature of the plague which for thirty years has been so destructive to our Potato crop was singularly manifested to the judges who undertook the task of adjudicating the prize offered by Lord Cathcart in the autumn of 1872, for the best essay on "The Potato Disease and its Prevention." The ninety-four competition essays were written, with very few exceptions, by practical men—growers of Potatoes—but only a small proportion showed any acquaintance on the part of the authors with the agent which destroyed the Potato. Unable to advise the bestowal of the prize on any of the competitors, the judges, considering the importance of the subject, the renewed attention given to it, and the defects in our knowledge of the parasite causing the disease, resolved to recommend to the Royal Agricultural Society to take the matter up as a subject of investigation, in the hope that some genuine addition to knowledge might be made, and some practical hints for the future guidance of cultivators might be secured. The society, approving of this recommendation, resolved to promote investigations as to the more strictly scientific aspect of the subject. They entered into correspondence with Professor De Bary, whose important additions to the knowledge and history of the Potato fungus, and whose elaborate memoir of the group to which it belongs, pointed him out as the fittest botanist to undertake this part of the work. Professor De Bary has cordially entered into the society's plans; and has now for some time been carrying on experiments and observations with the view of determining those points in the history of the parasitic fungus which are yet unknown. The society further resolved to look at the subject in its practical bearings, and endeavour to gain facts from the past experience of Potato-growers, and from experiments to be instituted, which might concur with the more purely scientific investigations to a definate apprehension of the Potato disease in all its bearings. A series of questions were accordingly addressed to extensive Potato growers throughout the United Kingdom; the answers have been digested by Mr. Jenkins, and published in his report on the subject in the last volume of the Society's Journal. It is there pointed out that in two cases where Potato crops followed Turnips they had been free from disease; and having suggested that the fungus might pass through different stages of its life on different plants, Mr. Jenkins proposed that observations should be made to discover if any connection existed between the previous cereal or Clover crop and the presence or prevalence of the disease. Still further, it having been asserted by many that certain varieties of Potato were free from disease, and this opinion being believed by many cultivators as well as dealers, the society resolved to offer prizes for early and late Potatoes, possessing good cropping, cooking, and keeping qualities, which would continue free from disease for three years, during which time they would be cultivated in different localities, under the direction of the society. It was required that the competitors should forward a ton of each sort intending to compete in twenty bags containing each 1 cwt. To prevent any but those who had some confidence in their Potato entering as competitors, it was required that the owner of any sort which should be attacked by disease during the experiment, should undertake to pay a considerable sum towards the expense incurred in growing his unsuccessful Potato, although this condition was not eventually put in force.

Before the end of February, 1874, six varieties of Potatoes had been delivered to the society's agent to compete for the prizes, two being early and four late varieties. They were as follows :

Early Potato, No. 1.—Wheeler's Gloucestershire Kidney.—This was raised from seed in the neighbourhood of Bristol about twelve years ago, but it is not known by whom. Its owners consider the special features which distinguish it to be freedom from disease, earliness, and good size and colour ; it has also a fine flavour, and is a good keeper and an excellent cropper. The competitors are J. C. Wheeler & Son, Gloucester.

Early Potato, No. 2.—Carter's Ash-top Flukes.—This was raised from seed by the competitors about five years ago, and is characterised by them as bein early, very productive, a good boiling kind, and remarkably free from disease. The competitors are James Carter, Dunnett, & Beale, London.

Late Potato, No. 3. — Carter's Improved Red-skin Flour-ball.—This was selected by the competitors in 1871 from a variety called Champion of England, raised by Mr. Barkshire, of Reading, and is characterised by its owners as being prolific, white-fleshed, and remarkably free from disease. The competitors are James Carter, Dunnett, & Beale, London.

Late Potato, No. 4.—General Grant.—This was raised by Mr. D. Cunningham, of Athy, Kildare, from a few tubers which he received from America. Its special features, according to the competitors, are that the shaws keep green when other varieties are blackened, the tubers are large and well formed, and it is the only late variety which resists disease. The competitors are Thomas M'Kenzie & Sons, Dublin.

Late Potato, No. 5.—Gleason's Late, or Hundredfold Fluke.—The origin of this Potato is not known, further than that it was imported by a Potato salesman in 1870. The competitors characterise it as having the haulm robust, branching, about 2½ feet in length ; stem, of a reddish tinge ; leaflets, flat-pointed, green, with coloured veins ; flowers, purple, generally sterile ; tubers, large, generally broad, flat, sometimes irregular in form, as if two or three were joined together ; eyes, few and full ; skin, smooth, very pale, with large bands or patches of rosy-purple ; flesh, white, and rather hard ; it is, though late, a good average cropper. The competitors are James Carter, Dunnett, & Beale, London.

Late Potato, No. 6.—Peach Blossom.—This Potato was raised by the competitor from tubers received in 1869 from New York. It is characterised as a good prolific Potato, and without disease during the four years it has been grown in this country. It is not ripe for use until November or December. The competitor is Baron Middleton, Boisdale House, York.

The committee fixed on twenty localities in which to grow these experimental Potatoes, selecting them in districts where Potatoes are extensively cultivated, and securing as far as possible as great a variety of climate, and method of cultivation as could be obtained within the United Kingdom. The hearty co-operation of the following gentlemen practically interested in the culture of the Potato in these various districts was obtained. They undertook to grow a cwt. of each of the six kinds of competing Potatoes.

1. *Kent.*—Mr. Robert Lake, Oakley, Higham, Rochester.
2. *Essex.*—Mr. Richard Spencer, Brooklands, Birchanger, Bishop's Stortford.
3. *Bedfordshire.*—Mr. G. J. Cocking, College Farm, Bedford.
4. *Staffordshire.*—Mr. John Brawn, Sandhills, Walsall.
5. *Lincolnshire.*—Mr. J. Algernon Clarke, Long Sutton.
6. *Yorkshire.*—Capt. R. S. Best, Moorfields, Goole.
7. *Northumberland.*—Mr. John Angus, Whitefield, Morpeth.
8. *East Lothian.*—Mr. Samuel D. Shirreff, Saltcoats, Drem.
9. *Perth.*—Colonel Ogilvy, Mill Hill Farm, Inchture.
10. *Elgin.*—Mr. Thomas Yool, Coulard Bank, Elgin.
11. *Exeter.*—Mr. John Daw, Exeter.
12. *South Wales.*—Mr. W. S. Powelll, Eglwysnunydd, Taibach.
13. *North Wales.*—Mr. John Roberts, Well House Farm, Saltney, Chester.
14. *Lancashire.*—Mr. Richard Simpson, Out Rawcliffe, Garstang.
15. *Cumberland.*—Mr. Thomas Gibbons, Burnfoot-on-Esk, Longtown.
16. *Ayrshire.*—Mr. Robert Wallace, Braehead, Ayr.
17. *Munster.*—Mr. A. J. Campbell, Fermoy.
18. *Connaught.*—Mr. John Nesbitt, Garbally, Ballinasloe.
19. *Leinster.*—Mr. J. A. Farrell, Moynalty, Co. Neath.
20. *Ulster.*—Miss Rose, Mullaghmore, Monaghan.

These various growers were supplied with instructions as to how the experiment should be conducted. They were requested to plant the competing Potatoes in adjacent plots in the same field with their own Potato crop, keeping each sort distinct, and submitting all to the same treatment as their ordinary crop. Each cultivator has, in answer to a series of questions, supplied information as to whether his district is open or wooded, and has much hedge-row or other timber on the land ; as to the soil, sub-soil, drainage, and slope of the particular field in which the Potatoes were growing ; as to the previous cropping of the field ; the kind of Potato forming his general crop ; the processes followed in preparing the land for the Potatoes, including a statement of the manure employed, the distance at which the seed-tubers were planted, and the quantity planted in relation to the space occupied. These different items of information have been brought together in a table, so that the different methods may be very easily compared and contrasted. Information has also been obtained as to the after-cultivation of the crop, and the monthly appearance of the experimental plots and the general crop. A book was prepared and forwarded to each grower for recording these matters. This book also contained a calendar for a daily record of the weather. With a single exception these books have been kept with great care, and from them has been derived the greater proportion of the facts contained in this report. The committee requested me to inspect all the plots while the Potatoes were growing. Between the 27th July and the 4th September I accordingly visited all the localities; beginning in the south of England, and travelling northwards until I reached Lancashire, then crossing to Ireland, and after inspecting the four plots there, returning again to the north of England, and prosecuting my journey northwards till I finished at Elgin. The committee further secured the assistance of five gentlemen to be present on behalf of the society at raising the crops, to superintend the operations, and determine whether the disease had attacked any of the tubers, and if it had, to determine the extent of the injury. Professor Baldwin, of Glasnevin, undertook this work for Ireland; Mr. Thomas Mylne, of Niddry Mains, Edinburgh, for Scotland; Mr. W. H. Wakefield, of Kendal, Westmoreland, for the north-west of England; Mr. Jabez Turner, for the east and north-east; and myself for the southern districts. Instructions were given to these judges to have all the Potatoes attacked with the disease separated from the others, and to weigh the produce in the field. They were to record in a schedule, with which they were provided, the weight of healthy Potatoes in each plot, of diseased ones, the size of each plot, and the rate of produce per acre. They were asked to supply also the same information about the general crop in each farm, and to record any observation which might be of interest in connection with their inspection. These reports were all duly made. The whole of the Potatoes were packed, the healthy and diseased tubers of each plot being kept separate and carefully labelled. They were then despatched to London, and received at the Agricultural Hall, where, by the courtesy of the directors, they were for some time accommodated. This report is based on the books kept by the growers on the notes made by myself in the course of my inspection of the growing crops, and on the reports of the judges who were present at the raising of the crops. The six tons of competing Potatoes (each ton in twenty equal sacks containing 1 cwt. each) were received in London in the end of February, 1874, and were despatched to the various growers in the first week of March. When the bags were opened at their destination the growers found in some that a few of the tubers were rotten. Mr. Campbell, who carefully examined the tubers and separated the rotten from the sound ones, believed the injury was due rather to frost and bruises sustained in transit than to disease. His opinion is confirmed by his interesting observations on the growth of the Potatoes. He counted all the sets which he planted, and afterwards the number of plants which grew in the drills. The results are shown in the following table:

TABLE SHOWING THE NUMBER OF SETS PLANTED AND PLANTS THAT GREW IN THE EXPERIMENTAL PLOTS ON MR. CAMPBELL'S FARM AT FERMOY.

No.		Sets Planted.	Plants Grew.	Percentage of Growing Plants.
1	Early	1,530	303	19·8
2	,, ...	1,969	173	8·7
3	Late	1,410	457	32·4
4	,, ...	1,107	474	42 8
5	,, ...	1,065	517	48·5
6	,, ...	1,665	1,115	66 9

These figures clearly show that a further injury had befallen the Potatoes than the careful inspection to which Mr. Campbell subjected them was able to detect. I am satisfied that no tuber attacked by disease or suffering from ordinary rot escaped him. But some hidden injury was present, such as might be the result of the exposure of the tubers to a severe frost. Yet that this injury, whatever it was, was not entirely produced during their transit from the competitors' premises to the growers is manifest from the fact that in all the experimental plots the No. 2 early Potato showed numerous blanks, and that the failures of the seed Potatoes of the other varieties were everywhere approximately in the same order as at Fermoy. The short journeys to the neighbourhood of London, as to Kent, Essex, and Bedford, of seed that had been stored in London, would of course save it from the injuries and dangers incident to a lengthened journey, like that to Ireland, with its repeated transhipments. We have fortunately a series of similarly extensive and careful observations by Mr. Spencer, of Essex. He examined the seed, separating each bag into three lots:—1. the healthy tubers of the particular variety; 2, the healthy tubers of sports, accidentally introduced among the true seed; and 3, diseased tubers. In all of the competing varieties, except in No. 6, he discovered tubers, more or fewer which were, he believed, affected by disease. Mr Simpson, Lancashire, detected also apparently diseased tubers, in the seed of No 2, early, and No. 4 late. The results of Mr. Spencer's observations as regards the germination of the seed-tubers are thus tabulated:

TABLE SHOWING THE NUMBER OF SETS PLANTED AND OF PLANTS THAT GREW IN THE EXPERIMENTAL PLOTS ON MR. SPENCER'S FARM, ESSEX.

No.		Good Sets Planted.			Plants Grew.	Percentage of Growing Plants.
		True.	Sports.	Total.		
1	Early	1,031	—	1,031	1,020	98·9
2	,, ...	1,107	—	1,107	751	67·8
3	Late	553	21	574	539	92·1
4	,, ...	512	18	530	457	86·2
5	,, ...	655	11	666	652	97·9
6	,, ...	657	1	658	646	98·1

The tubers believed to be diseased were planted at the end of each lot. When the injury to the tuber had not been so great as to kill the eye or bud and destroy the starch-food needed for the germination of the bud, these tubers grew, and were, when I examined them on the 28th July, all perfectly free from disease. A large proportion, however, did not grow, as shown by the following table:

TABLE SHOWING THE NUMBER OF APPARENTLY DISEASED SETS PLANTED AND OF PLANTS THAT GREW FROM THEM, IN THE EXPERIMENTAL PLOTS ON MR. SPENCER'S FARM, ESSEX.

No.		Diseased Tubers Planted.	Plants Grew.	No.		Diseased Tubers Planted.	Plants Grew.
1	Early ...	6	0	4	Late ...	6	3
2	,, ...	75	3	5	,, ...	2	0
3	Late ...	14	5	6	,, ...	0	0

I learned from Mr. Spencer that he had in the previous year's experimented with diseased seed-tubers with the view of determining the relation of their products to the disease; and he had observed that the plants grown from them were not more liable to be attacked by the disease, or to suffer from it, than those grown from healthy tubers. The aspect of the eleven plants, when I visited the experimental plots in Essex in the end of July, corroborated Mr. Spencer's conclusions. This is of considerable value in relation to the yet unsolved question as to how the fungus causing the disease maintains its existence from the autumn to the following July or August, when under favourable circumstances it suddenly appears and spreads with wonderful rapidity. It rather tells against the opinion that the life of the fungus is maintained by planting diseased tubers; for, instead of the disease appearing first in the plants produced from them, these plants suffer only along with, and in the same proportion as, their neighbours produced from healthy seed. On the other hand, it must be remembered that if the mycelium of the parasitic fungus developed in a single plant grown from a diseased tuber, and this mycelium fructifies, the enormous mass of seed which is rapidly produced and re-produced under suitable conditions, would fully explain the spread of the disease. We look forward with much hope to the observations and experiments that Professor De Bary is now prosecuting for light on this obscure part of the history of the Potato fungus. In the stations in the south and east of England, and the south of Ireland, all the seed-tubers were in the ground before the close of the month of March; in the north and west of England, in Scotland, and in the north of Ireland, they were all planted before the middle of April. The information obtained from the growers, or observed during my visit to the different localities where the crops were growing, as to the nature of the soil, previous cropping, the preparation of the land, the manure, and the time and manner of planting the seed, will be best appreciated in a tabular form, where the eye can readily compare and contrast the various data given. The season of 1874 was dry up till the end of July and the beginning of August, when frequent and sometimes heavy rains occurred. In the progress of my inspection of the crops I met with no disease till I passed over to Ireland. Thereafter, throughout Ireland and Scotland, and the north of England I found the experimental crops diseased, except in Northumberland and East Lothian. At Elgin some of Mr. Yool's general crop was effected by disease, but I was unable to detect any among the experimental plots, though it was found to be present in three kinds when the Potatoes were raised, but then only to a very small extent. The disease appeared suddenly in Ireland, and spread with its wonted rapidity. In a few days after its appearance the fields in the south and west of Ireland were black. I visited Fermoy (Munster) on August 15th. The crops had been progressing satisfactorily till the beginning of the month. Until July 26th there had been no rain on the field in which the Potatoes were growing since they were planted, but on that day there was a heavy shower, and showers occurred during several succeeding days. On August 4th the leaves of all the experimental crops, as well as of the regular crop, showed here and there the presence of disease; and on the 15th I found that it had reached the tubers in some cases. When I reached Ballinasloe (Connaught), on the 17th, the extent of the injury from disease was greater. The field in which the Potatoes were growing had been recently reclaimed from bog, and was almost a black peat. The whole of the plants were remarkably vigorous, but the foliage was extensively diseased, and the tubers were also affected. The early suffered more than the late varieties; but when the crop was raised it was found that there was 21 per cent. of the early, and 27 per cent. of the late, diseased. At Moynalty (Leinster) the Potatoes were grown in lazy beds in a field which had been a neglected pasture for a great many years, and which was in very bad condition. On August 18th all the sorts were attacked by disease, the early again showing a greater injury than the late varieties. The disease first appeared in the Potatoes growing under some large trees which bordered the field; at the time of my visit the foliage in these patches was quite blackened. When the crop was raised more than a fifth of the late varieties were diseased, and a smaller proportion of the early ones. The Potatoes were in a very flourishing condition at Mullaghmore (Ulster), when I visited them on the 19th August, but the disease had made its appearance some days before, and already it was visible on the foliage of all the plots as well as of the general crop. In the prosecution of my inspection I found the disease present in the plots at Longtown and Perth, and more extensively at Ayr. At Elgin some of the general crop was injured by the disease, but as I have already stated I did not detect any trace of the disease at the stations in Northumberland and East Lothian. The result of this visit to the various localities left no uncertainty as to the competition for the society's prizes, but it was determined to carry out the programme fixed upon. The condition of the crops as affected by the disease at the time they were raised is exhibited in the following table:

Earlies.	Per-centage.	Lates.	Per-centage.	Both Varieties.	Per-centage.
Ayr	60·5	Connaught ...	27·1	Connaught ...	25·3
Cumberland ...	24·2	Exeter ...	24·9	Ayr	23 6
South Wales ...	23 4	South Wales	22·4	South Wales	22·4
Connaught ...	21·7	Leinster ...	21·4	Exeter ...	20·9
Munster ...	18 6	Munster ...	10·3	Leinster ...	18 9
Ulster	18·0	Ayr	5·2	Munster ...	13·0
Perth	15·2	Lancashire ...	4·4	Cumberland	10·9
Leinster ...	14·0	Cumberland	4 3	Ulster ...	7 4
North Wales ...	13·3	Perth	3·4	Perth	7 3
Exeter	13·0	Ulster ...	2·1	Lancashire ...	6 5
Lancashire ...	10·7	North Wales	0·0	North Wales	4.4

The only locality that entirely escaped the disease was Long Sutton, Lincolnshire. In the other localities not included in the above table, traces of the disease were detected, varying somewhat in extent. Stafford had the largest proportion, and the others followed in this order:—Kent, Northumberland, Essex, East Lothian, Yorkshire, and, lastly, Elgin. In examining the information already given in the tables and body of this report with the view of discovering, if it be possible, an explanation of the greater prevalence of the disease in some districts than in others, it is important to notice the common starting-point in these experiments, and where the different conditions and agencies come into operation. The seed-tubers were in every case of the same stocks, and they were carefully selected, and believed by their respective owners to be characterised by a remarkable freedom, if not entire immunity, from disease. Each of the six bags received by every grower contained the same weight of the same kind of seed. The differences of condition and treatment began when the seed came into the possession of the growers. When the crops were raised the greatest differences as to the disease were found to exist in the various localities. At Lincoln the whole of the experimental crops were entirely free from disease, and comparatively little was seen in any of the plots on the eastern side of Great Britain, while at Ayr three-fourths of one of the early varieties were diseased, and at Connaught a half of one of the late varieties, and all along the western districts of the kingdom the crops were extensively destroyed. It seems obvious from these well-marked differences that the kind of the seed-tubers, which were the same in all the localities, cannot be the efficient cause of the disease. We may consequently set aside all the notions, still to a considerable extent prevailing, that the disease itself is due to anything peculiar to the variety, as, for instance, its supposed exhaustion from long cultivation of the tubers. It will be observed that in the same field and with the same treatment the second suffered much more than the first early Potato, while among the late varieties the fourth suffered the least, the sixth the most, and the third and the fifth were almost equally affected. Still further this relation of liability to disease persisted, with an approach to uniformity, in the various localities, so that, as a rule, the fourth was the least affected by the disease, and the sixth the most. The tendency of these results is to support the opinion that a Potato may be found which will successfully resist the disease. In the crops at Exeter, South Wales, Connaught, and Leinster, the fourth late Potato suffered to the extent of only 11·6 per cent., while the sixth in the same four localities suffered no less than 43·8 per cent. The external conditions of each of the kinds being invariably the same in each locality, it appears that the power to resist the attack of the fungus is due to some inherent property in the plant which is common to all the plants of the variety. Whatever this property is, there seems no reason to doubt that a difference which has shown itself so obviously in these localities may be found in some varieties sufficiently pronounced to free them altogether from the attack of the disease. I have made a microscopical examination of the leaf epidermis of the six kinds of Potato with the view of ascertaining whether any character could be detected which might explain the freer access of the spores to one variety than to others. The upper surface of the leaf is sparsely covered with short curved hairs, which rise irregularly from the epidermal cells. These hairs are almost entirely confined on the under surface to the veins and their various and minute ramifications. The epidermis of the spaces between the veins gives off some scattered grandular hairs, composed of a small round transparent ball supported on a short jointed stalk. In none of the varieties are these hairs sufficiently numerous to prevent the spores lodging on the surface of the epidermis. The leaves of the two early Potatoes are most densely covered with both kinds of hairs. I found no appreciable difference in the four late varieties. In looking, then, at the conditions naturally applied under which the crops were grown, we may hope to find in them some help towards understanding the remarkable differences that are exhibited in the tables. We may at once dismiss the soils from our consideration, seeing that the disease was severe as well on the peat of Connaught as on the loam of Ayr and South Wales, and the stiff clay of Exeter, while similar soils in other localities were free from the malady. The information supplied by growers of Potatoes led Mr. Jenkins, in his recent report, to suggest the probability of the fungus which produces the disease being parasitic during part of its life on some other cultivated crop. As parasitic fungi, which, as far as the knowledge of them has been ascertained, might be related to the Peronospora of the Potato, had been found on Wheat and Clover, and as the Potatoes that escaped disease, in the returns on which this report was based, followed green crops, Mr. Jenkins recommended that observations should be instituted with the view of determining whether Potatoes following Wheat and especially Clover, were more liable to disease. Professor Farlow has as we have seen, recommended the prosecution of similar inquiries in America. Last year's experimental crops do not give any support to the suggestion of Mr. Jenkins. In two localities Staffordshire and Lancashire, the Potatoes followed Clover, and though in both places disease was found to have attacked all the kinds of Potatoes, it was only to a small extent. In the majority of cases, as was to be expected, the Potatoes followed crops of Cereals; in the localities where the disease chiefly prevailed there were Oats, but at Exeter the preceding crop was Wheat. In one place, South Wales, they followed Turnips, and here the Potatoes suffered considerably from disease. As far, then, as these experimental plots throw any light on the subject, it appears—1, that the oospores of the fungus do not exist in the tuber, as has already been fairly demonstrated by the many careful investigators who have failed to discover them in the tubers they have examined for this purpose; and, 2, that the oospores are not produced in the plants of previous crops. These side lights may lead to the discovery of the wanting link or links in the history of the Fungus, but we must look to the labours of the cryptogamic botanist for satisfactory information, and it is matter of congratulation that the Royal Agricultural Society have been so fortunate as to secure the co-operation of Professor De Bary in this work. The presence of the disease is ascribed by many to the use of certain manures. Artificial manures, guano, and farmyard-manure are respectively condemned by different growers, each without any sufficient reason; while particular manures are put forward as specifics against the disease, as well as advantageous to the crop. If the hitherto undetected oospores of the fungi were introduced to the Potato field with the manures, it is obvious that artificial manures, from the methods of their production, must be entirely free from these bodies. In three localities artificial manures only were applied to the crops, but the results do not hold out any hope that in this direction security may be obtained. At Exeter 2 cwt. of nitrate of soda, and 3 cwt. of dissolved bones were applied per acre, but a quarter of the late varieties were diseased. The early Potatoes escaped with a smaller proportion, but this was due to the fact that they had ripened, and the foliage of most of them had completely disappeared before the disease showed itself in the last week of August. It is certain, moreover, that the full extent of the disease was not detected at Exeter when the crops were raised, as the day was showery, and the tenacious clay of the field in which they grew so adhered to the tubers that it was impossible, without washing every Potato, to separate completely the diseased from the sound tubers. At Kent the only manure employed was half a ton to the acre of Odam's Potato manure, and though the injury here was slight, all the varieties as well as the general crop suffered from disease. At Bedfordshire 70 bushels of soot per acre were applied, and the crops were almost free from disease. In the seventeen other localities the chief manure employed was from farmyards. This manure might be the medium of introducing the disease as the oospores of fungi are remarkably indestructible and might resist the destructive action of the dunghill, and even pass, without losing their vital powers, through the alimentary canal of animals. There is, however, no indication in last year's experiments that the appearance of the fungus had any connection with farmyard-manure.

TABLE SHOWING THE FIVE HEAVIEST CROPS OF THE LATE VARIETIES (3, 4, 5, AND 6), AND THE CONDITIONS UNDER WHICH THEY WERE GROWN.

	Yield of 4 cwt. of Seed.		Soil.	Drainage.	Manure.	Seed, Whole or Cut.	Size of Plot.	Space for each Set.	Estimated Weight per Acre.			Weight per Acre of Ordinary Crop.		
	cwts.	lbs.					poles.	feet.	tons.	cwts.	lbs.	tons.	cwts.	lbs.
Ayr	64	2	Loam on clay	3½ ft. deep, 24 ft. apart	30 tons farmyard, 4½ cwt. guano	All cut	15	2·62	8	14	20	No return.		
Stafford	51	47	Sandy loam	None	25 tons farmyard	Partly whole, partly cut.	5¼	2·06	18	1	88	21	5	0
Lincoln	48	53	Loam on silt	Thorn drains, 2½ ft. deep	10 tons farmyard, 6 cwt. superphosphate		10	2·72	9	15	92	15	5	28
Bedford	46	99	Loam on gravel	None	70 bushels of soot		21½	2·81	4	5	81	9	7	100
North Wales ...	46	52	Sandy loam	1½ ft. deep	19 tons farmyard, 3 cwt. artificial	All cut	9	3·06	9	15	27	10	0	94

TABLE SHOWING THE FIVE LIGHTEST CROPS OF THE LATE VARIETIES (3, 4, 5, AND 6), AND THE CONDITIONS UNDER WHICH THEY WERE GROWN.

	Yield of 4 cwt. of Seed.		Soil.	Drainage.	Manure.	Seed, Whole or Cut.	Size of Plot.	Space for each Set.	Estimated Weight per Acre.			Weight per Acre of Ordinary Crop.		
	cwts.	lbs.					poles.	feet.	tons.	cwts.	lbs.	tons.	cwts.	lbs.
Lancashire ...	16	43	Peat on clay	3 ft. deep, 24 ft. apart	16 tons farmyard, 4 cwt. artificial	Partly whole, partly cut	6	2·33	5	8	25	6	0	0
Northumberlnd	19	59	Free soil on sandstone	3½ ft. deep, irregular	20 tons farmyard	All cut	12¼	2·62	3	10	9	No return.		
South Wales ...	23	78	Light loam on gravel	3½ ft. deep	20 tons farmyard, 6 cwt. artificial	5 whole, 3, 4, 6 cut	7½	2·08	6	16	91	8	0	0
Ulster	28	4	Light	None.	22 tons farmyard, 5 cwt. artificial	Partly whole, partly cut	10½	3·75	5	9	19	No return.		
Munster ...	30	0	Loam on limestone	None.	40 tons farmyard, 5 cwt. superphosphate	All cut	12	2·29	5	0	94	No return.		

Lincoln, with 10 tons per acre, was entirely free from disease, and Yorkshire with 15 tons, and East Lothian with 25 tons, were but slightly affected, while similar quantities were employed in localities which suffered heavily. The result of Dr. Voelcker's experiments at Carlisle, showing that the kind of manure had no appreciable influence on the presence or extent of the disease, is confirmed by the experiments of last year. If we divide the twenty localities into two groups, the one containing the places where the disease occurred to any appreciable extent, and the other, those that were more or less completely free from it, it will be observed that they arrange themselves geographically, the first group being all (excepting Perth) on the west side of the United Kingdom, while the second are on the eastern side. This grouping does not, of course, depend on temperature, soil, or method of cultivation, as there is nothing in common among the members of each group in regard to these points. But the two have each a somewhat close agreement in regard to the rainfall, the amount on the western side being much greater than on the eastern, consequently this division gives us for the eastern stations the smallest amount of disease and the least rainfall, and for those on the western side the largest amount of disease and the heaviest rainfall. We have already seen that as long as the season continued dry the Potato crops were healthy, and that the disease immediately succeeded the heavy rains. There can be no doubt that the appearance and progress of the disease is intimately connected with the amount of moisture present in the atmosphere. Now that the fungus (Peronospora infestans, Mont.) has taken possession of our country, its spores abound in the air, and are ready to germinate whenever the proper conditions are present. As grain does not grow when stored in the barn, and deprived of moisture, so the spores of this Fungus cannot germinate without a supply of moisture. They may rest on the surface of the leaves of the Potato and remain perfectly harmless if the air contains no free moisture, for they can obtain none from the interior of the plant as long as they are external to it. In July or August, when the warm atmosphere drinks up to saturation the rain that has fallen, any slight reduction of the temperature, like that caused by the setting of the sun sets free a certain amount of water vapour; the spores are able to appropriate what they require of this vapour, and begin their active life by pushing out a small process or thread. Of all the spores which thus germinate only those that are in close relation to the host-plant are able to maintain their life. Stone and earth afford no nourishment to the young plant of the peronospora, nor even the leaves and stems of any of the plants on the surface of which it may germinate, unless these belong to the Potato. But when the small thread from the spore has pushed its way through a stomate or penetrated the skin, it obtains possession of a supply of food and moisture suited to all its needs, and speedily develops, destroying the plant in its progress, and throwing into the air myriads of new spores to spread the malady among the neighbours of its host. The successful cultivation of the Potato in relation to disease is then, judging from our previous knowledge and from the results of last year's experiments, really the problem of combating the free atmospheric moisture, a battle whose issue is not uncertain. And as we cannot cope with this adversary, we shall, yielding to circumstances, probably see the cultivation of the Potato travelling eastwards to the districts in our island where the rainfall is small, and the soil is naturally or artificially well-drained. Whenever the crops in the west can be secured before the July rains sets in, there is no risk. At Ayr Mr. Wallace grows early Potatoes extensively for the markets in the centre of England, and no crop could be more safe or profitable when thus managed. But the same field which yielded, early in the season, a heavy crop of perfectly healthy but immature tubers, produced in the autumn a crop of ripe Potatoes in which, in one of the varieties, three-fourths were diseased, while the whole six varieties were injured on the average to the extent of very nearly one quarter. The experiments of last year may supply information as to the best conditions under which the Potato can be grown. Does the exact information contained in the schedules of the growers and the judges throw any light on the great differences in the actual yield of each hundredweight of seed, or in the estimated yield per acre? The most obvious fact on the face of this table is that, with few exceptions, the varieties selected by each grower for his general crop yield a larger return than any of the competing Potatoes. The early kinds cannot, of course be fairly contrasted with late Potatoes in respect of weight of crop. But it may be noticed that in each locality the produce of the early varieties and of No. 5 late were greatly below the general crop; that in four localities (Stafford, York, South Wales, and North Wales) the produce of No. 3 was heavier; in two localities (Kent and North Wales) the produce of No. 4 was heavier; and in one locality (Lancashire) the produce of No. 6 was heavier than that of the ordinary crops in these various localities. Returns respecting the general crops were received from only twelve out of the twenty localities. At Ayr the general crop was taken out of the ground long before maturity; and at Perth the general crop had been raised, without taking any notice of the produce per acre, before it was known to Colonel Ogilvie that this information was wanted. The gross yield of the competing Potatoes and of the general crop in these twelve localities is shown in the following table:

TABLE SHOWING THE ESTIMATED PRODUCE OF THE EXPERIMENTAL POTATOES, AND THE ACTUAL PRODUCE OF THE GENERAL CROP PER ACRE IN ALL THE TWELVE LOCALITIES FROM WHICH INFORMATION HAS BEEN OBTAINED.

	Tons.	cwt.	lbs.
No. 1, Early	45	19	43
,, 2, Early	31	10	0
,, 3, Late	128	10	0
,, 4, Late	96	15	47
,, 5, Late	80	15	106
,, 6, Late	82	6	10
General Crop	126	10	16

If we except from this table the extraordinary crop of No. 3, which Mr. Brawn raised at Sandhills, Staffordshire, which raises the total yield of that variety to a higher figure than the general crop, it becomes obvious that the farmers who assisted the society are in possession of Potatoes which yield, in their various localities, heavier crops than, with similar treatment, they have been able to obtain from any of the competing varieties. The great differences exhibited in the table in the actual produce of the 1 cwt of seed is very remarkable. In the first early, under the careful farming of Mr. Campbell, at Fermoy, there is a yield of only 88 lbs., or about three-quarters of the seed planted, while in Ulster Miss Rose obtained a crop weighing 10 cwt. 60 lbs. Again, at Morpeth a yield of 1 cwt. 54 lbs. was obtained from the seed of No. 4 late, while on the other side of the country, at Ayr, the same seed produced 14 cwt. 18 lbs. It is obvious from these and similar facts exhibited in the table that all the varieties of Potatoes are not equally suitable to the different conditions of soil and cultivation met with in Britain. This is further confirmed by the fact already noticed that the competing Potatoes in almost every case yielded a smaller produce than the varieties cultivated for the general crop in each locality. In examining the conditions under which the best crops have been produced in the various localities, it is extremely difficult to discover any conditions that are common to several of them. There is, in these experiments, an amount of certain data which might be expected to supply materials for trustworthy deductions; but we discover, as is so often the case in agricultural experiments, many unaccountable anomalies. The agreements and differences should be most obvious when the localities producing the heaviest crops are contrasted with those producing the lightest. The five localities yielding the heaviest return of seed produced also the heaviest estimated crop per acre, with the exception of Bedford, where the size of the plot was unusually large. But though the plot was large, the average space for each set was not more than 2·8 square feet, so that the division of the seed-tubers to form a large number of sets, while it produced a considerable return in weight for the weight of seed, yielded the comparatively small return of 4½ tons per acre. The seed Potatoes were cut under Mr. Cocking's instructions into as many pieces as could be obtained, so that each piece should have two eyes. The weight of the crop at Bedford was considerably affected by the very dry summer, which stopped the growth of the tubers before they attained their full size. When the rain came the foliage of the early Potatoes was dead; but that of the late varieties was still green and active, and in all of these a new formation of tubers began, either by the addition of a new portion to the apex of the already formed tuber, or more frequently by the throwing out from its buds or eyes of several new tubers. Half the weight of the crop at Bedford was due to these latter-formed tubers. In several other localities in England the crops were similarly but not so extensively affected as at Bedford. The aërial portion of the early Potatoes at Bedford being, as has been said, completely dead, the rains causing many of the tubers to sprout. It appears, then, from the results of the experiment at Bedford, that a large number of small sets do not produce so heavy a crop per acre as the same weight of seed planted in large sets. This is strikingly confirmed in Mr. Brawn's crop at Stafford, where, from cutting few of the seed-tubers, the hundredweight of seed occupied, on an average, only 5¾ poles. The yield of 51½ cwt. for the 4 cwt. of seed is a large return; but 18 tons per acre, on an average of the four late varieties and 27 tons for one of these varieties (No. 3), are remarkably heavy yields. On the other hand, at Ayr, the same quantity of seed, planted nearly three times the space, and while a heavier yield, weight for weight, was secured, the estimated produce, per acre, fell to 8¾ tons. It appears then from these and other instances, which an examination of the tables will show, that the Potato which starts with a large supply of food in the tuber, and secures by its help a good hold on the soil and a good mass of foliage in the air, produces the most remunerative crop. The multiplication of the seed in these experimental crops by cutting the tubers, means, of course, nearly the same as occupying a large plot, for, as the space allowed by the different growers for each set was tolerably uniform, and as the number of seed-tubers was practically the same throughout, the necessity for a large plot was due to an artificially increased number of sets. The tables in this view confirm the conclusion already stated, that a given weight of seed may be so spread out as greatly to reduce the yield, per acre, of the crop, even though the sets are not widely separated, but placed at a moderate and uniform distance from each other. The average space allowed to each set is from 2½ to 3 square feet. This is somewhat more than the space which Mr. Maw determined to be the most profitable distance. His experiments showed that to give more than 2 square feet to each set gave no advantage in the shape of an increase of weight. It deserves the consideration of growers, in the face of his results, whether too large a space is not given to each set, and the produce, per acre, accordingly reduced. Thus, to take the most extreme case in these experiments, had only 2 square feet been given to each set in the Essex locality, the produce of No. 3 late might have been 16 instead of 7 tons. The varieties of soil supply no sufficient explanation of the difference in amount of produce, although the richest soils exist in the localities which produced the heaviest crops. It is still more remarkable that heavy manuring has not produced a corresponding result in the weight of crop. The experiments of Dr. Voelcker and the experience of growers point to the dung of the farmyard as the best Potato manure. Nevertheless, we notice that 40 tons of this manure, with 5 cwt. of super-phosphate applied as a top-dressing, produced 5 tons per acre in Munster, while 25 tons, without any artificial manure, gave a crop of 18 tons per acre in Staffordshire. It is, however, certain that the most successful Potato growers use a large amount of manure.—"Journal of the Royal Agricultural Society."

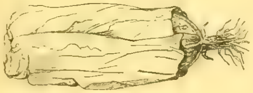
PEAT.

Properly speaking, peat comes under the head of soils, but it is frequently used as a manure, and often enough employed as a substitute for leaf mould. In many parts of the country it is more plentiful and easier procured than the latter; and I have known it applied with excellent effect to heavy soils for Potato crops. It is one of the best ameliorators of strong soils generally that can be used, and if laid up first as a compost with lime and other refuse for a few months, it becomes a highly nourishing manure. Carrots thrive amazingly in it, and all kinds of vegetables root quickly amongst it. Many plants which naturally grow in loamy soils will thrive in peat alone. The Pine-apple is not unfrequently grown most successfully in pure peat and sand. Plenty of people who cannot get leaf mould can get peat, and they may use it instead of mould for all purposes. Nurserymen use it extensively for nearly all indoor plants, and in greater proportion than most gardeners do; yet where do we find such healthy stock speedily got up? For mixing with loams for potting, I prefer peat to leaf mould; not used in a lumpy state, however, but thoroughly broken up and rubbed through a sieve, fibre and all. Composts for potting or any other purpose should always be thoroughly mixed, and this can only be done by first reducing the different materials to as fine a condition as possible by chopping them with the spade, and putting them through a screen, or teasing them out any way most convenient. Lumpy composts never are, and never can be, mixed as they ought to be for the roots of plants to lay hold of. One important quality of peat is, that it not only encourages the multiplication of roots, but preserves them better than any other soil. For this reason it is sometimes used for winter Cucumbers along with loam, a healthy root action being of most importance in the winter culture of these. I have used nearly pure peat for many years for autumn-potted Pine suckers, and invariably the roots of the plants are both healthy and abundant in spring. Peat soils differ widely in different localities, and some people are very particular in the kind they use; but I have used it of all descriptions, from the top spit of the swampy bogs in Scotland to the Heath off the English commons and the thin peat sods of the Yorkshire moors, upon which not heath, but wiry upland Grasses only grow, and have found all excellent for my purposes, only using more or less sand according to the character of the peat. Of course I always selected the most fibry kind. Of the famous Kent peat, now become a regular article of trade with nurserymen, I never bought a load, nor do I believe it is a whit better than the peat, procurable at the door in many places. That this opinion is by no means a common one, however, is evident from the fact that the Kent peat is bought by gardeners at only a little less than half the price of bones in districts where peat of excellent quality can be procured for nothing on the estate. As a rule, peat is better mixed with other soils than by itself. Turfy peat retains water like a sponge, and, when used by itself for peat-loving subjects, if not mixed with a good proportion of sand and well drained, it is apt to get sour with a few over-waterings; while on the other hand plants firmly potted in it, if allowed to get thoroughly dry at the root, can only be again soaked by steeping. In potting Heaths and such things, the utmost care should be taken to see that the ball is moist before potting, as, if dry, no amount of waterings will soak the old ball. Peat should not be used for potting purposes until the fibre is partially rotted. It then chops up easily, or may be rubbed through a sieve without loss, and is then in the very best condition for using. I always procure the sods when in a moist state, and lay them up in a heap under shelter for a few months. This kills the Grass roots, and the soil never gets too dry, whereas peat got in after a period of dry weather is often parched, and, when used, is hard and knotty. J. S.

Use of Tan for Blanching Celery.—Owing to the very wet autumn we have had, and the difficulty of getting the strong soil of the kitchen garden here friable and dry enough for earthing up the late Celery crops, I used old tan for that purpose. I now find, on taking up this Celery for daily use, that it is well blanched, crisp, and good flavoured, the white varieties especially showing none of the rusty-coloured spots, caused by little black slugs eating the outside stalks underground. I once used fresh tan for blanching Celery; but, unless the tan is charred in the ground after the Celery is taken up, a crop of Fungi springs up. The old spent tan, when well mixed with the soil after the Celery is taken up, is free from this; for I have never seen Fungi appear in it, as when new tan was used. Old tan, besides keeping the slugs in check, is excellent for preserving the Celery from severe frosts, as it often gets injured when earthed in the usual way.—WILLIAM TILLERY.

Failure of Winter Spinach.—This appears to be general this season, and that quite independent of soil or situation. I sowed mine about the second week in August, after the second crop of Peas were cleared off. The ground was dug, well trodden and raked over, and drilled 15 inches apart. The seed came up as evenly as if it had been machine-drilled. The ground is well sheltered from north-east to west, but fully open to the south, with an incline of 16 inches in 10 feet, the drainage being naturally perfect. In confirmation of this I may mention that I sunk a stoke hole, 9 feet deep, at the bottom of the garden. When occasion requires we draw off the water from several hundred feet of 4-inch piping, and it soon soaks away, yet half of my Spinach has died away as described by your correspondents—a result, I believe, brought about by the mild wet autumn which we have had and the saturated state in which the surface soil has been kept. There has also been a want of sun and wind to dry the ground between the rains. For seventeen years past I have never had Spinach fail here.—JOHN GARLAND, *Killerton, Exeter.*

Packing Lettuce.—The delicate Cabbage Lettuces, sent throughout the winter to our markets from the market gardens of Paris, are sometimes objectionable from the fine earth of the roots spreading over the Lettuce leaves. This necessitates the Lettuce being washed, which, to many, is objectionable. The Cos Lettuce, however, which comes in early spring in great quantities, is frequently packed with paper, as shown in the accompanying little cut, and in this way comes without being soiled by the root earth.



Wintering Beetroot.—In wintering a large crop of Beetroot from which to grow seed the following year, I invariably adopt a plan which some years ago I saw answer admirably, at Mottisfont Abbey, Romsay. There the whole of the kitchen roots are laid beneath a grove of Nut trees, where the ground is light and comparatively dry. After Christmas, when severe weather may be looked for, leaves are shaken over them, and these, combined with the shelter afforded by the overhanging branches, effectually protect them. My roots are placed in a similar soil under the shelter of a spreading Oak, and with them are also the roots of my stock of Salvia patens. I find that Beetroot wintered in this way possesses a richer flavour than when stored in sheds or cellars, but especially are the crowns more healthy and robust for seed production.—A. D.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Walcheren Broccoli v. Snow's and other Winter Varieties.—We are just now (Jan. 4th) cutting three and four dozen small, but deliciously flavoured Walcheren Broccoli heads a week, and although we are growing in quantity Snow's, Backhouse's, and Osborn's, not one of these has yet been cut. They are lifted, laid outside, and slightly protected with Fern fronds.—R. G., *Burghley.*

Snowball Cauliflower.—This delicious little Cauliflower is now being cut from the open ground, having become fit for use since the disappearance of the snow. The heads are about 4 inches across, and as solid and white as could be desired, whilst the flavour, from the plants having been grown without strong manure, is all that can be desired. This Cauliflower, if sown in July, can be made to produce an abundance of heads all through the winter, if the plants are lifted before very severe weather sets in. The size is so small that the plants will heart well if potted in 24-sized pots, and placed in any vacant cool house.—D.

Shallots in Suffolk.—These are grown in almost every garden in this locality, both large and small, the soil—a light sandy loam—being particularly favourable to their growth. They are generally preferred to Onions for pickling, as well as for a variety of other purposes. As regards cultivation, their bulbs are merely pressed into the soil 1 foot apart each way, and afterwards they are kept free from weeds. They are fit for lifting about the end of June or early in July, and should be stored in a dry airy shed until wanted for use.—J. GROOM.

NEW PLANTS, &c.

Rheum nobile.—This noble plant was discovered nearly thirty years ago by Dr. Hooker, growing on rocky precipices of the lofty mountains of the Sikkim Himalayas. Its long fusiform roots lengthen into a short thick rhizome, throwing up each year a single erect stem close to that of the preceding season, growing to the height of a man, and probably taller under cultivation. The stem is completely clothed with leaves and imbricated reflexed bracts, forming conical or spiral masses of yellow, red-margined foliage quite distinct from anything else in cultivation. Seeds of this novelty have now been introduced and advertised by Mr. Thompson, of Ipswich, and others. The first figure of this noble-foliaged plant, which will doubtless become invaluable for sub-tropical gardening, was published in Hooker's "Illustrations of Himalayan Plants," and it is well figured in "L'Illustration Horticole," t. ccix.

Draba Mawii.—A dwarf-tufted Spanish species found by Mr. G. Mawe, in 1870, near Pancorbo, in Old Castille, between Burgos and Miranda. It is a pretty little plant, bearing a profusion of reddish-brown buds, and white flowers about half-an-inch in diameter. "Botanical Magazine," t. 6,186.

Crocus Boryi.—A very pretty autumn-flowering Crocus, a native of Greece, and first brought into notice by Colonel Bory in 1832. The flowers are creamy-white, with a yellow eye, and it is a very desirable addition to the autumnal species. Mr. Elwes found the plant growing at Syra, along with C. Crewei in 1875. "Botanical Magazine," t. 6,187.

Wahlenbergia Kitaibelli—A purple-flowered Hungarian plant, introduced by Messrs. Backhouse & Son from the Alps of Croatia. The flowers are deep purple-blue behind, and elegantly bell-shaped in form, being borne in dense clusters at the apex of the procumbent pinkish stems. The leaves are linear, and of a bright green colour. "Botanical Magazine," t. 6,188.

Delphinium Cashmirianum.—A very showy herbaceous plant, found on the Western Himalayas at altitudes varying from 12,000 to 15,000 feet. The flowers are of a bright bluish-purple colour, borne on the apex of the leafy stems, the leaves being palmate and inciso-dentate like those of the common Monkshood. "Botanical Magazine," t. 6,189.

Masdevallia Davisii.—A very showy yellow-flowered Orchid, found near Cuzco, in Peru, and sent to Messrs. Veitch, who flowered it in August of the present year. It is quite distinct from all the other species, being a clear golden-yellow colour; the flowers are also very freely borne solitary on long scapes among the bright green fleshy leaves. "Botanical Magazine," t. 6,190.

Tulipa Eichleri.—A very showy species, native of Georgia, bearing large and showy crimson flowers, each segment elegantly incurved and having a blackish-purple spot at the base inside, surrounded by a yellow rim. It has been introduced by Mr. Elwes, and first flowered in the spring of this year. "Botanical Magazine," t. 6,191.

Heteranthera limosa.—A pretty blue-flowered aquatic, seeds of which were sent from Santa Martha (New Granada) to the Royal Gardens by M. Endres, and these germinated and flowered in a few weeks. It is widely distributed in both North and South America, and is worth culture wherever pretty little aquatics are admired. "Botanical Magazine," t. 6,192.

Oxalis arenaria.—A very pretty free-growing species from Chili, where it is widely distributed, being found in sandy pastures near Valparaiso, Santiago, and other localities. The flowers are dark rosy-purple, borne six and eight together on a slender scape, the leaves being bright green and ternate, as in most of the other species of this large genus. "Botanical Magazine," t. 6,193.

Dion edule.—This is a strong-growing Mexican Cycad, something like Cycas revoluta in habit; its deep green leaves forming a crown on a trunk 2 to 4 feet in height. It rarely fruits in this country; but in Mexico the seeds are eaten as food by the natives. "Botanical Magazine," t. 6,184.

Notice to "The Garden."—This London journal in quoting an item about that best of Squashes, the Butman, speaks of it as a Squash Gourd. No, Sir, our Squashes are not Gourds any more than our Blackberries are Brambles, our Sweet Potatoes Yams, (as you had it the other day), or Sequoias Wellingtonias, and if you don't stop calling things "out of their names," and cease speaking of the Squash as a Gourd, we shall feel obliged to call the attention of President Grant to the matter. Recollect that we are near the Centennial birthday—and there are some things we just won't stand. British Garden beware! The Great American Potato Beetle has its eye on you.—"American Agriculturist."

IVY AND THE POETS.

The death of Hans Christian Andersen gives an especial interest to the following account which he recently gave of an interview with the Poet Laureate:—That was a melancholy meeting between me and the great English poet, in his quiet, unpretending home in the Isle of Wight. Fifteen years before I had visited him in company with Charles Dickens. Then we were in the best of humour, Dickens' sparkling wit carrying away with it not only poor me, who have always had a weakness for humour, but even the grave Tennyson, who looks as if it cost him a labour to smile. At that time Tennyson was a fine-looking man, with black hair and beard, and his face was scarcely furrowed. I thought I had greatly changed in these fifteen years, but he had evidently grown old much faster. As we shook hands we looked in each other's eyes, and his filled with tears. Why, I don't know exactly. I suppose it was a tribute paid to the memory of Charles Dickens. Indeed the words he uttered were:—"And this time you come alone, Mr. Andersen. Do you remember the theatrical performance at Gadshill?" Why should I not? The play was "London Assurance," and the leading part was given by Charles Dickens. That was in 1858, and among the audience were Charles Read, Delane, and others whose names have since become famous. "What a time we had!" exclaimed Tennyson. "Yes," I replied; "and do you remember getting me out of bed a four o'clock in the morning, so that we might go with you to the Isle of Wight?" Of course he did, and he made me walk with him through the garden, as he had done fifteen years before. There was the tablet to the memory of young Hallam. It looked somewhat dimmer than in 1858, but it had been surrounded in the most æsthetic manner with the finest growth of Ivy. "Ivy seems to be your favourite plant," I said to Tennyson.—"To tell the truth, it is," he replied. "Ivy needs no nursing. It knows neither cold nor heat. It is the plant of immortality." "But what about Laurel?" I rejoined. "Laurel wreaths," he said, playfully, "look well enough in pictures, but in reality they wither too soon." How many writers have I seen wreathed in Laurel, and how soon it became dry and withered.

Gardening in Mysore.—At Bangalore, which is the chief town in the province of Mysore, the climate is very favourable for gardening. In 1874, the annual mean of the dry bulb thermometer, taken from the maximum and minimum daily corrected readings at the Observatory of the Civil Hospital, which is 3,000 feet above sea level, was 72°, and, 100 being the maximum, the humidity was 70, ozone 44, and clear sky 48. The rainfall was excessive, being 56½ inches as against the average of 36 inches. With the exception of 14 cents. on one occasion there was no rain whatever for the first sixteen weeks. In the two following weeks 58 cents. fell at intervals, but from the 4th of May, the day of the cyclone, rain fell every week up to the end of the forty-fifth week. From the forty-sixth to the fifty-second week inclusive only 1¼ inch fell. During the present year, up to the 3rd of December, only 22 inches have fallen, and the scarcity of water is much felt. During 1874 the Magnolia flowered twice in the government gardens; the Wigandia, which is arborescent, was in full flower in November. The beds of Devoniensis and Emma Roses flowered freely on four different occasions, the Spathodeas and the Bignonia venusta thrice. The Bougainvillea spectabilis, which always comes out in such marvellous beauty in February, flowered again here and there, in a tentative manner, during the wet weather in August, an occurrence that had not been observed previously. The heat during the early part of the year was very great, but as the garden is commanded by a good supply of water, and, as irrigation was carefully kept up during the time of drought, all the foliage plants seemed to revel in the sun, and to display their colours to greater advantage than I ever remember to have previously noticed.—J. P.

The Scarlet Runner (Phaseolus multiflorus).—This well-known plant was brought into this country from South America in 1633, and was first cultivated in Lambeth, by Tradescant; but it was merely planted as an ornament to cover walls and to form arbours, without any idea of cooking the pods for the table. Its flowers were in favour for nosegays, but its legumes did not come into use as an edible vegetable until brought into notice by Miller, in the eighteenth century.

Senator, Professor, and Market Gardener.—Lamartine, in his "Memoirs," gives an exquisite picture of M. St. Hilaire, after his expulsion from the chair of Greek and Latin at the Sorbonne, for refusing to swear fealty to the Empire, working as a market gardener. He retired in 1852 with an aged aunt, to whom he stood in lieu of a son, to a cottage standing in a patch of ground near Meaux; whilst she lived he went on cultivating vegetables for the Paris greengrocers, whose patronage he was very glad to secure. M. St. Hilaire is now seventy years of age, and a hale hearty man. He is a member of the Assembly of France, one of the newly-elected senators, and was secretary to M. Thiers when that statesman was President of the Republic, and during the most trying crisis in the history of France.

Browneas at Lakelands, County Cork.—These are flowering most profusely this winter, the magnificent B. macrophylla having had no fewer than ten of its gorgeous Rhododendron-like heads of fiery orange-scarlet blooms scattered over all parts of the tree, from close to the earth at the base of the trunk to the tips of the young branches, all being in full beauty at one and the same time; these blooms only remain in perfection for a couple of days, and then fall to pieces At this moment (January 2) there are two fine heads of bloom on B. grandiceps, which is much less brilliant and striking in colour than the last-named variety, the flowers being of a light rose colour, and one fine head just beginning to fade, coming from a young shoot at the base of the tree on B. latifolia, which comes next in beauty and brilliancy to the first-named variety. Many of these fine stove shrubs in this rich collection have grown too tall for the somewhat low house, where they are most of them either growing in large tubs or planted out in a deep sunk border, and they have accordingly to be tied down to prevent them from pushing through the roof. I am happy, however, to say that Mr. Crawford is having an addition made of several feet in height over the whole house, and when this is completed and glazed, the present roof will be removed, and the tied-down specimens will be able to be released from the ligatures that now confine them, and expand themselves to their full proportions in their newly enlarged quarters. The beautiful and fragrant Luculia gratissima is now covered with its deliciously scented trusses of rosy-blush coloured flowers, growing in a large tub in a cold greenhouse at Lakelands.—W. E. G.

NOTES AND QUESTIONS—VARIOUS.

Mushrooms in Sawdust.—One of your correspondents asks if the flavour of Mushrooms is impaired by being grown in sawdust. I have this season a large bed made of this material after it has been used as bedding for horses, and I find that the flavour of the Mushrooms is in no way affected. Our sawdust is, however, prepared from fresh, sound wood.—R. Gilbert.

Roses out of Doors in Hampshire.—I this morning (January 4th) gathered from the open ground excellent blooms of the following Roses, viz., Gloire de Dijon, Alfred Colomb, Duke of Edinburgh, Souvenir de la Malmaison, La Reine, Marie Baumann, and Baronne Prévost.—W. W., *Heckfield.*

Good Globe Artichokes.—No vegetable is here more esteemed than Globe Artichokes, but they must be fat and plump and of large size. We are just now thinning the old stools, leaving three of the strongest shoots, and putting 3 inches of manure among them, which acts not only as a mulch but as a protection.—R. Gilbert.

Laurustinus for Cut Bloom.—Following Mr. Simpson's recommendation I got half-a-dozen standard Laurustinus. and just now (Jan. 4th) they are one mass of bloom, their flowers mixing up well in bouquets at this dull season. I consider them in perfection before the blooms open; they are then pure white, and do not droop.—R. Gilbert, *Burghley.*

Sea-shore Live Oak.—Could any of your readers inform me what the "Sea-shore live Oaks" of the United States are, or the name of the tree whence the timber is procured? I have recently read in the papers that for ship-building purposes it stands unrivalled, resisting the wear and tear of years, and being practically imperishable It is said, however, that it is fast disappearing, and that the supply will soon be exhausted.—V.

Euonymuses as Window Plants.—Few plants are more thoroughly adapted for balcony or window decoration than these. The golden and silver variegated varieties are much more conspicuously variegated when their roots are confined in pots than when planted out, gross growth causing them to revert to the original green state. Even in the dry and often dusty atmosphere of living rooms these plants will keep healthy for a longer period than most others.—J. Groom.

Cutting and Seed Boxes.—The season for propagating and seed sowing being close at hand, it is advisable to see that a good stock of these useful articles is in readiness, for where large quantities of bedding plants are grown it is endless work to put them in singly. I find that boxes 2 feet 6 inches by 1 foot 6 inches are much more serviceable than such as are much larger, as one man can readily move them about; whereas larger ones are not only cumbersome to move, but soon break in removal by the weight of soil which they contain.—J. G.

The late Frost in Cornwall.—We have had, down here a much harder frost than you have had—one night 16°, which killed a fine plant of Euonymus, but Cyclamen persicum is uninjured—indeed, the plants are still in flower, as if there had been no frost! I had for years thought this Cyclamen as hardy as the rest, and am quite convinced of it now. Five of my Camellias, 6 feet high, large bushes that have never been under glass that I know of, are injured.—J. T. Boscawen, *Lamorran Rectory, Probus.*

Bedding Calceolarias out of doors in Winter.—In addition to our regular stock of these that are wintered in ordinary cold frames, we have for several years put in a few rows of cuttings close under a north wall, as a chance crop, and without any protection but that of the dead leaves of fruit trees that rolled amongst them, or, on the occurrence of severe frost, a few evergreen branches laid on them. They stand ordinary winters, and make excellent plants with a minimum amount of labour.—J. Groom.

No. 217.] SATURDAY, JAN. 15, 1876. [Vol. IX.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

PLANTING TREES IN SUMMER.

It may be useful to place on record some of my experiences in planting, which, in some cases, may be exceptional, but from which I, at least, have learned some important lessons. I may add, too, that my opportunities of observation have been by no means limited, inasmuch as I have for some years been engaged in transplanting quantities of all sorts of choice trees and shrubs, varying from the more expensive of specimen Hollies and Japanese Conifers, through the whole range of Japanese and commoner shrubs, both deciduous and evergreen kinds of all ages. There is little doubt that planting can be carried on with perfect success throughout the whole of the winter months, when plants are in a dormant state, and I was compelled often to be very indifferent about the time when such work was done, provided always that the weather was sufficiently mild and free from frosts and cold dry winds. I am however, far from being satisfied that winter, when the vitality of trees and shrubs may be considered to be at its lowest ebb, is the best season for transplanting them. Take, for instance, Hollies, Berberis Darwinii, Skimmias, Japanese Conifers, Wellingtonias, Euonymuses, Escallonias, and others, all of which will be found to move more safely very early in autumn or early in summer, when their vital energies are active, than in winter. In the case of other subjects, it is interesting to remark the success attending their transplantation at different seasons. Last season, I transplanted some hundreds of thousands of trees, consisting of various sorts of Conifers and deciduous trees, the work of moving which extended over a period of six months, from the 1st of November to the 1st of May. The whole were lifted from a home nursery, and were virtually planted at once. At midsummer, it was easy to tell which were planted at mid-winter, which in autumn, and which in spring. Those planted latest in spring contained the fewest deaths; those moved in mid-winter and in March, the greatest number. The planting in autumn was not early enough; October would have been better. Of course, these were all plants of small size, moved without any balls of soil whatever; on the contrary, they were simply lifted from the nursery ground, and pit-planted in trenched ground. It was clear that such evergreen Conifers as Scotch Firs, Spruce, and Austrian Pines, succeed best when planted at the period when vitality was becoming active; being lifted at home, they had no time to become dried, and, being planted at once, they took to the ground directly. The case was, however, different with those planted in mid-winter, when they were dormant and the soil cold. Winter is, however, the time when trees and shrubs as articles of commerce can be best dug up without soil adhering to them, and sent to a distance by railway with least risk of suffering from dryness or heating, as is often the case when packed closely in boxes or railway-trucks. They will also keep longer alive in a dormant state, and wait the planter's time better than at any other season. Planting, too, can be carried on more conveniently in winter than at any other time, as labour is then more plentiful; it is the time, also, for carrying out ground-work and trenching; and altogether, from a labour point of view, winter is the most convenient season for extensive planting. But, having to deal with living plants more or less affected by the rigours of winter—some hardy and tenacious of life under ordinary circumstances, others tender, and requiring studious care—the most convenient season is not often that which is best to secure the safety of the trees. I have for years moved large quantities of trees and shrubs during the mid-winter months, with scarcely one failure; but they were carefully handled, and in most instances were furnished with good balls of soil. I have too, moved considerable numbers at midsummer with equal, or still greater, success; and those moved then always made the best growth the following season. Trees planted in winter invariably grow but indifferently the following summer; they seem to require a lengthened period to recover from the shock of removal; but, in the case of summer-moved plants, the check is only temporary at the time of removal, and they grow away the following spring as if nothing had happened. The warmer the weather, too, the more successful, generally, are the results of planting, provided the subjects operated on are exposed as little as possible to hot sunshine. Three years ago I transplanted a large quantity of evergreen and deciduous trees and shrubs during a very hot fortnight in April; of these the most important part consisted of choice Conifers, such as Cupressus Lawsoniana, Wellingtonias, Pinus insignis—heavy healthy trees—Thujas, Picea nobilis and Nordmanniana, Abies orientalis and Douglasii. In addition to these were also Laurels, Catalpas, Scarlet Chestnuts 15 feet high, Tulip trees, and Liquidambars, all pushing into growth. Lookers-on shook their heads in doubt, and I began to fear that operations had been begun too late, but the ground was newly trenched and mellow, and the trees were lifted by one set of men while another planted them almost directly; after planting, some were watered, but not very liberally, and the majority not at all; yet the result was most satisfactory, except in the case of a few Wellingtonias, which died back. I attributed my success to the hot weather which prevailed at the time. It warmed the soil and kept the sap of the plants moving; had there been cold easterly wind, with even cloudy weather, success might not have been so complete. Another exceptional instance of success in planting—this time when growth was at its height—may be noticed. Last summer, in the middle of July, I was obliged to transplant a quantity of evergreens and deciduous trees and shrubs to make way for some improvements in progress. We looked upon the work as a sort of forced experiment, most of the subjects being large, and the variety comprehensive, including Conifers, Laurels, Rhododendrons, Lilacs, Forsythias, Weigelas, Leycesterias, &c. Some could be lifted with balls, some not; none were allowed to be out of the soil many minutes; for, as soon as a plant was lifted, a pit was ready for its reception. It so happened that none had any artificial watering, the soil being light and moist from recent rain, and the work was conducted under a hot sun and clear weather; but thunder-showers fell after the planting was completed. In some instances the young growths hung down their heads immediately after transplantation, but invariably in the morning they were found to be erect, and the more healthy and succulent the plants, the better they seemed to stand removal. Of course, the whole were in active growth, and, in the case of the common Laurels, some of them very large bushes, although they had shoots like Asparagus, in a week's time no one could have told that they had been moved at all. From experience, therefore, I may say that the season of greatest safety, as regards transplanting trees and shrubs, is not when they are dormant and when life is at a low ebb, but when it is at full tide and growth active; that is the time when an injured tree can most quickly repair the damage which it has sustained; fresh roots will be made in twenty-four hours, under a hot sun and warm soil; whereas, in winter, roots will often languish and die when injured by removal. One more instance, of an exceptional character, which might be dangerous in the case of any hard-and-fast rule respecting the best time for planting, and one which will prove the soundness of the principle carried out in all our best nurseries, and recommended by all planters, requires a passing remark, and that is periodical removals. Thirty large Deodars, ranging from 15 to 24 feet in height, and furnished to the ground with branches, some of them with boles as thick as a man's thigh, were, in consequence of the development of certain plans for extension, removed six times within three years, a period of from five to seven months elapsing between each time of removal. The balls were from 6 to 8 feet in diameter! the roots, too, extended beyond the balls, the weight of which necessitated considerable labour to move them, and strong tackling. The first removal was the most difficult, as they had occupied the position in which they grew for some years, and it was then doubtful whether or not the whole of them would live. When the second removal was undertaken, many were of opinion that they would fail; but it was found that, although the branches had not improved after the first shift, the roots had, and they were found to lift much more readily than on the first occasion. These trees were, however, looked upon as drawing near their last; and, when the third removal was decided upon, an old workman gravely proposed making a fire of them, and a somewhat unceremonious commencement was made in lifting them. This time it was found, however, that the balls were one solid mass of small wiry roots; and, in planting, it was found difficult to get soil intermixed among the fibres. Afterwards the balls became round as cheeses, tough and matted; and the question was not whether these trees would live, but whether it was possible to kill them. I believe, if it had been possible, that latterly we might have pulled them up by the stem, balls and all; yet all these Deodars are now growing, and in good health, notwithstanding their singular peregrinations. Now, as to planting, one of the very first essentials to success is that the soil be trenched and broken up, so that it can be well worked in among the roots, and also that the ground surrounding the latter be well aërated. I prefer, on the whole, high planting; but on very light land, with an open sub-soil level with the surface. The old-fashioned plan of shaking the tree from side to side, and lifting the stem up and down, in order to settle the soil amongst its roots, is, I had hoped a thing of the past; at least, as a rule, I should not recommend it. Thus treated, in puddle, or even in loose soil, roots must as a natural mechanical result get bent and twisted. I prefer placing the tree or shrub in position after the soil in the pit has been brought to the proper level; then stretching every root carefully outwards from the bole, filling in the soil over them—the bottom roots first, the uppermost last—and covering the whole before treading or watering. Some of the soil I leave for a final dressing when the ground has settled down after watering. The staking of newly-planted trees is a matter also of the first importance, for if they are allowed to be blown about by the wind the roots become strained or broken off at the collar. I, however, object emphatically to the driving of a stake down by the side of the stem through the roots and tying the tree to it, because, in the first place, the roots are sure to get injured, and again the stem of the tree is in much danger of being chafed by the top of the stake, or by the tie during wind-waving. Only the other day I saw an illustration of this in the case of two long lines of fine avenue Chestnuts, each of which had four long poles driven in round the bole to serve the double purpose of steadying it, and to prevent cattle from rubbing against it. At the top of the poles, which were 6 feet high, a band of straw had been wrapped round the tree, the poles being tightly bound against the straw by a coil of strong wire. Mechanically the operation had been at first well done, but in the course of time the straw from the wind-waving of the trees had wasted away, and then the stems had become so chafed that only a narrow communication of bark existed, and one of the trees had lost its top by breaking over at the damaged part. The plan which I like best is using three galvanised wires fixed to a collar at a convenient height up the tree, and fastening them to stumps driven into the ground at a certain distance from the stem, thus avoiding the roots altogether. Wire looks better than stakes, and is cheaper in the end, and any kind of stick strong enough may be driven into the ground as a holdfast. Strips of old guano bags make good collars, or rags of any sort, or even straw ropes. Tar cord, instead of wires, is sufficient for small trees such as Cypresses, and Thujas up to the height of 10 feet. For very large trees we employ wire such as is used for fencing. A handy man with a little practice soon becomes expert at fastening trees in this way; he cuts his three wires off to one length, fastens one end of all three to the collar, catches hold of the other, and stooping down with the wire at full stretch, makes a mark on the ground with a finger of the hand which holds the wire; this is exactly the spot where he drives in his stump, with the sharpened end inclining inwards towards the stem of the tree, thus giving greater facility for fastening the wire and placing the stump in an advantageous position like a man pulling at a rope; one or two turns of the wire and an additional blow with a mallet tightens the wire; the other two wires are then served the same and the work is finished. W. D. C.

TOM PUT APPLE AND ITS VARIETIES.

In last number (see p. 21), both Mr. Uphill and Mr. Ellacombe have made a few observations respecting this Apple, which Mr. Ellacombe tells us is plentiful in his neighbourhood. In Somerset, its native county, Tom Put is pretty well known and highly appreciated; but the Apple best known is the one referred to by your two correspondents, and which is what we call, in Somerset, the Colebrooke, the name of a hamlet near Crediton, Devon. Tom Put and it are one and the same variety, which is referred to, at p. 27, by two other correspondents. All these writers describe, as far as they go, the Colebrooke variety exactly, and Mr. Taylor mentions the knobby peculiarity that this tree has along with a few others, such as Manks Codlin, Oslin, White Juneating, and Burr Knot. But, besides Colebrooke, there exists other varieties of Tom Put, of one of which I sent you specimens some time ago, and now again send the same sort, which we call the Old Tom Put, so that you may see it is a good keeper, and very beautiful, whilst in pies or puddings it has few equals. Along with Old Tom Put, I also send you the Colebrooke variety, which you will find very small this season, and not so finely coloured as it generally is. I have likewise enclosed four fruits of the same kind, badly coloured, *i.e.*, they have not had sun enough. They serve to show how variable this Apple is in its colouring, according to good or bad seasons. This brings me to a subject I had intended to have written about before, and that is the great likeness of the Colebrooke Tom Put to Hoary Morning, which is another of our beautiful Somersetshire Apples. So like are the two sorts, that I am inclined to think them the same, only I do not recollect that Tom Put has a hoary efflorescence. If I live to see another crop of fruit, I will minutely watch the two sorts, and report upon them. In the meantime, I may say that I find no other difference between the two, except the bloom. On turning to M. Leroy's useful dictionary of fruits, I observe that the outline figure there given of Hoary Morning is exactly like the specimens of the Old Tom Put sent you; but his description belongs to the Colebrooke variety of that Apple, at least nearly so. Besides the two varieties which I now send you, there are two more Tom Puts grown hereabouts, viz., the White one and the Spicy one. This last is by far the best as a dessert fruit; and, as its name implies, it is spicy and very aromatic. I am sorry I cannot send you specimens of these two last, or of Hoary Morning, having now none left. As a county, I think Somerset stands in the foremost rank as regards Apple cultivation, for, although Devon claims the greatest acreage, we have far finer orchards and orcharding. No other county can show such Tom Puts and Hoary Mornings, or can produce such specimens of Scarlet Pearmains as we can. J. SCOTT.

Merriott, Crewkerne.

[The large, round, somewhat flat-shaped, highly-coloured Apple sent along with this, seems to us to be different from Hoary Morning.]

Ivy and Trees.—I ought, perhaps, to have stated (see p. 546, Vol. VIII.) that my remarks applied only to Ivy-cutting where timber is grown for profit. We do not cut it off trees in wild ornamental coverts, nor in the parks. In wildernesses, pleasure-grounds, and in wild ornamental woods it may be allowed limited freedom. It is incorrect to say that Ivy does no harm. In our Oak coppices it has done great injury to the trees and bark; the latter, indeed, is hardly worth peeling off; it is almost as thin as paper, inferior in quality, and costs double the labour to take it off that it otherwise would do. I think it does more harm to Oak trees than to any other, especially young Oak trees. Ivy cutting is a heavy item in our expenses, for it was allowed to grow for very many years unchecked until I came here, and 2,000 acres of Oak coppices are not got over in a very short time. In all judiciously-managed woods that I have seen Ivy is kept in check. Perhaps your correspondent's Apple tree (see p. 4) was too vigorous a grower and required nearly pinching to death to throw it into fruit bearing. Producing wood and growing fruit are widely different subjects.—GEORGE BERRY, *Longleat.*

Masdevallia Ephippium.—This is a New Grenadian plant, having large, brownish, bowl-shaped flowers formed of the partly united sepals, the apices of which are lengthened into tails 3 or 4 inches in length. The flowers are solitary, on triquetrous scapes, and of a dull brown colour, the tails being yellow. The leaves are broadly spathulate and very fleshy. This is the M. Colibri or M. Trochilus of the "Illustration Horticole" (see plate 180), where the flowers are shown of a rich brown colour, relieved by warm yellow lights, and dotted or mottled with dark brown, the outer surface of the sepals being also shown with blue lights. We have seen this plant blooming in Mr. Bockett's collection, and judging from his plant, the "Illustration Horticole" has the more faithful plate of the two. "Botanical Magazine," t. 6,208.

THERE are 38 agricultural and horticultural colleges in the United State 389 teachers, and 3,917 students.

NOTES OF THE WEEK.

—— Among choice flowers brought to Covent Garden during the past week we remarked blooms of Lælia anceps Dawsoni, a white variety, and one of the most beautiful and rare of all Orchids; also flowers of Angræcum eburneum, a noble Orchid, from Madagascar, introduced to our gardens by the late Mr. Ellis. The recent hard weather has had a bad effect on the supplies of flowers for the London market, these being both scarce and dear.

—— Mr. Marot, of the "Gardeners' Monthly," Philadelphia, has purchased the "Horticulturist," for some years published by Mr. H. T. Williams, and consolidated it with his own excellent magazine —hereafter, as from its origin, to continue under the editorial management of Mr. Thomas Meehan.

—— Californian Grapes have been made into raisins with great success and facility, the bunches being simply cut from the Vine and laid in the sun to dry for five days. This kind of manufacture is also a very profitable investment, as while for wine-making the Grapes are only worth about £5 a ton, as raisins they fetch about nine cents. a pound wholesale, being at the rate of £50 per ton.

—— On the 22nd of December last a monument was erected in Père-la-Chaise, Paris, to the memory of M. Barillet-Deschamps, formerly gardener to the city of Paris. The memorial consists of a base surmounted by a large stone sarcophagus ornamented with drapery, flowers, and other emblems, the whole crowned by a bust of M. Barillet. Addresses were delivered by M. Henri Vilmorin, and by other gentlemen, in which the works of the deceased were reviewed.

—— Mr. T. Moore, editor of the "Irish Gardeners' Record," has started with the new year an agricultural paper, "The Irish Farmer," which promises well, and is, we think, destined to prosper, and to meet the wants of that class of farmers who cannot afford high-priced papers. The gardening part will, we trust, have a good effect on the farmers's gardens in Ireland, which are in anything but an advanced state.

—— Among foreign fruits now brought to our markets may be mentioned the Chinese Litchi, which resembles, in general aspect, fruit of the common Plane, and which contains a sweet and agreeably flavoured pulp within a dry husk. Sapucaya Nuts are also plentiful, and are by some considered superior in flavour to the more common Brazil Nut, both being the produce of nearly-allied South American species of Lecythis.

—— Mr. McIntosh, of Oatlands Park, Weybridge, has sent us plump well-developed seeds of Lilium auratum ripened in the open air in his garden at Duneevan, an account of which was given in The Garden (see p. 395, Vol. VIII.). It may not be generally known that seeds of this noble hardy Lily grow freely if sown in a raised bed of good garden soil and sand. If sown thinly, the young plants need not be disturbed until they have flowered. Mr. Tillery (of Welbeck), Mr. Gadd (at Wollaton), and other Lily growers, have raised many seedlings in this simple manner.

—— The annual meeting of the Horticultural Club was held the other day, at the club house, Adelphi Terrace, when the accounts were audited, and were found to be very satisfactory. It was determined that during the winter months occasional meetings for discussion on subjects connected with horticulture should be held, the first being on the 19th, when the principles and practice of pruning will be discussed. The formation of a library was also determined upon, and the committee will thankfully receive any works on horticultural subjects which may be given for that purpose.

—— The friends of Mr. Alexander McKenzie, as a tribute of their appreciation of him, have resolved, on the occasion of his resigning his active duties at the Alexandra Park (although still occupying the position of landscape gardener to the Company), to present him with a testimonial, as a memento of his long and valued connection with the neighbourhood, the various public works he has executed at Alexandra Park, the Thames Embankment, Finsbury Park, &c. Mr. John Bertram, Alexandra Palace, Muswell Hill, N., is honorary secretary to the committee.

—— We have received from Mr. W. H. Watson, of Braystones, near Whitehaven, a pamphlet on "Water in relation to the incrustations of boilers," in which careful chemical analyses are given of waters from different districts, and much valuable information furnished as to their liability or otherwise to produce incrustations. Where carbonate of lime is present, it may be precipitated prior to using the water by adding to it a solution of baryta, varying in strength according to the amount of lime held in solution. One of the best, if not the best process, by which boilers may be freed from incrustation, and one which recommends itself on the important grounds of cheapness, easy application, and general efficacy, is that in which soda-ash, or caustic soda is added to the water. The chemical action consists in the decomposition of the sulphate of lime, the result being carbonate of lime and sulphate of soda.

ÆCHMEAS AND THEIR CULTIVATION.

Amongst the large number of Bromeliaceous plants in cultivation, there are several Æchmeas and Tillandsias that occupy a very high position, as well for the varied beauty of their flowers as for the graceful vase-like form of the plants, produced by the peculiarly elegant curvature of the leaves. From the many desirable properties which they possess, it would be difficult to imagine any subjects more worthy of general cultivation. They are easily grown, and, from the moderate size they attain, they are equally suitable for the largest establishments, and for places where the space devoted to plant-growing is limited. The different species flower at different times in the year, thus affording a welcome succession in their blooming; some last in beauty for several weeks; others, like the handsome medium-sized Æchmea fulgens and Æ. discolor, with their intensely red flower-spikes, remain very attractive objects for months after the actual flowers are gone, their appearance being such as to require close examination, to determine whether the blooms are closed or yet to open. Several of the species are of a partially epiphytal nature, growing in the shady forests between the forked branches of trees, sustained in part by the decayed vegetable matter lodged there, and probably in some cases extending their roots down the trunks to the ground, where they will obtain additional nutriment. From this, it will be easily understood that the roots of these plants do not like to enter soil that is of a close, adhesive nature, requiring it to be the opposite—loose, fibrous, and open—although there is some difference in the ability of the different species to exist in soil of a nature not in accordance with their wants in the above respect. Still, no mistake can be made in growing all the under-mentioned in peat as full of decayed Fern roots, and other vegetable fibre as can be got, in addition to which it will be advisable to add a seventh part of charcoal, or crocks broken about the size of Horse Beans; to this put a moderate quantity of sand, and mix the whole well together; in this they will not only make roots freely, but the roots will live much longer—a circumstance that has much to do with the number of suckers the plants are able to throw up after flowering, and on which in a great measure depends the rate of increase in subjects of this nature that are slow to propagate. The several species push from the base of the full-grown plants, about or after the time of blooming, suckers like most Bromeliads. These should be allowed to remain upon the old plants until they have attained a considerable size—say one-sixth that of the crowns from which they spring. It is important to leave them attached to the parent plant until they have got something like the above size, as if removed too young they are long in making much progress. When thus allowed to attain a fair size before being taken off, they will generally be found to have a number of roots just breaking through the bark at the base. The suckers will usually be in a condition to take off in the autumn; slip them off with the fingers, being careful not to injure the incipient roots, or they may be taken off with the help of a sharp knife. In this condition they will root into the soil immediately, putting them singly in from 3-inch to 6-inch pots, according to the size of the suckers; drain the pots well, and for this first potting sift the soil, forcing all the fibrous portion through the sieve, and add more sand (about one-fifth) than will be required when the plants get larger; give a moderate watering at the time they are put in, and place them at the warmest end of the stove, in a temperature of 65° or 70°. If a little bottom-heat is at hand, it will assist the formation of roots; but do not cover them with a propagating-glass, as the hard close texture of the leaves is of a nature that allows little loss by evaporation, consequently they do not flag when exposed in the atmosphere of the stove, as would be the case with ordinary cuttings of most things. Kinds such as Æ. fulgens, that form a few inches of stem below the point where the leaves are emitted, simply require inserting in the soil up to the base of the leaves; in the case of species that do not make any length of stem it will be necessary to strip off a few of the bottom leaves before putting them in. Keep them through the winter in a night temperature of 60°, with 5° higher in the day; place them in a light position, and let the soil be moderately moist. By the beginning of March, as the days get longer, raise the temperature 5° during the night, and 10° during the day; about the end of the month move them into pots 1 or 2 inches larger, according to the size of the plants, using the soil in a rougher state, and adding crocks or charcoal, as already advised. The pots must be well drained, and must not be used too large, as the whole of the different species do not like too much root room. When the sun gets more powerful, shade will be required in the middle of the day. By the beginning of May the temperature should be increased to 70° or 75° in the night, and proportionately higher by day, giving air in good time, but closing early in the afternoon. A slight syringing at the time of shutting up will assist growth. Continue this treatment through the summer months, always keeping the soil moderately moist, as, if allowed to become dry at any time, the plants will be injured. At the end of August dispense with shading and give more air; as the autumn advances reduce the temperature down to the point recommended for the season previous, and winter similarly. As the days lengthen increase the temperature, and move them into pots 2 inches larger, using the soil in a more lumpy state. Treat as in the preceding growing season as to heat, shade, and moisture. In the course of the summer the plants will push up their flowers, and as they open may, if required, be placed in a warm conservatory, but must not be set where they will be subject to a current of air, neither must they be exposed to the sun. When done blooming move them back to the stove, and treat them as before. Suckers will now be formed, and, when large enough, should be taken off and treated generally as already advised. The old plants should be kept, and, if well cared for, will through the spring push up more suckers, that can, when they have attained sufficient size, be taken off and struck as recommended for those first produced. The following species of Æchmea and Tillandsia, though differing much in size and general appearance, will all succeed under similar general treatment; of course, proportioning the diameter of the pots in which they are grown to the size to which the different kinds naturally attain. At the head of the list stands the splendid

Æchmea Mariæ Reginæ, a truly regal plant of comparatively recent introduction. It is a native of Costa Rica, and is of stately growth, the leaves 18 inches in length, gracefully curved. From the centre springs the flower-spike, from 20 inches to 2 feet in length. It is erect, and partly clothed with ample deep rose-coloured bracts, which retain their colour for several months. The flowers are tipped with blue, and as they get older change to a salmon colour. This magnificent plant is yet rare. It flowers in July.

Æ. fulgens.—This has a much smaller flower than the preceding, and is from Cayenne. It bears bright red erect flower-spikes, that have the appearance of branching sprays of coral, which last and retain their colour for months after the flowers are gone. It is one of the best comparatively small decorative plants in cultivation. When grown in 6 or 8-inch pots it is especially useful for standing during the summer months in a conservatory, where its intense colour contrasts well with that of other plants.

Æ. fulgens discolor is a variety of the above, requiring similar treatment.

Tillandsia Lindeni.—This, one of the most beautiful of small-growing plants, is a native of Brazil. The leaves are prettily curved; the flower-scape rises for a considerable height, and is rosy-carmine in colour; the flowers are proportionate to the size of the plant, and are of the most vivid blue with a white eye.

T. Lindeni major is similar to the above, but has larger flowers. Both bloom in the summer, and do not require large pots.

T. splendens.—This is a plant of smaller growth than T. Lindeni, with short, blunt, recurved green leaves, barred with deep brown; the scape is bright red, the flowers white. It is handsome in or out of bloom, and does not require a pot over 6 or 7 inches in diameter. It flowers in the early part of summer.

Insects.—Æchmeas and Tillandsias are not very subject to the attacks of insects. Mealy bug and scale will live upon them, but the texture of the leaves is such as to admit of these being easily removed by sponging and a free use of the syringe. T. Baines.

When are Oranges fit to Gather?—Would some of your correspondents inform me, through The Garden, how I may know when Oranges are fit to gather for dessert, and how long they take to ripen from the time the fruit has set?—B. C. J. W.

HUSKLESS CHINESE WALNUTS.

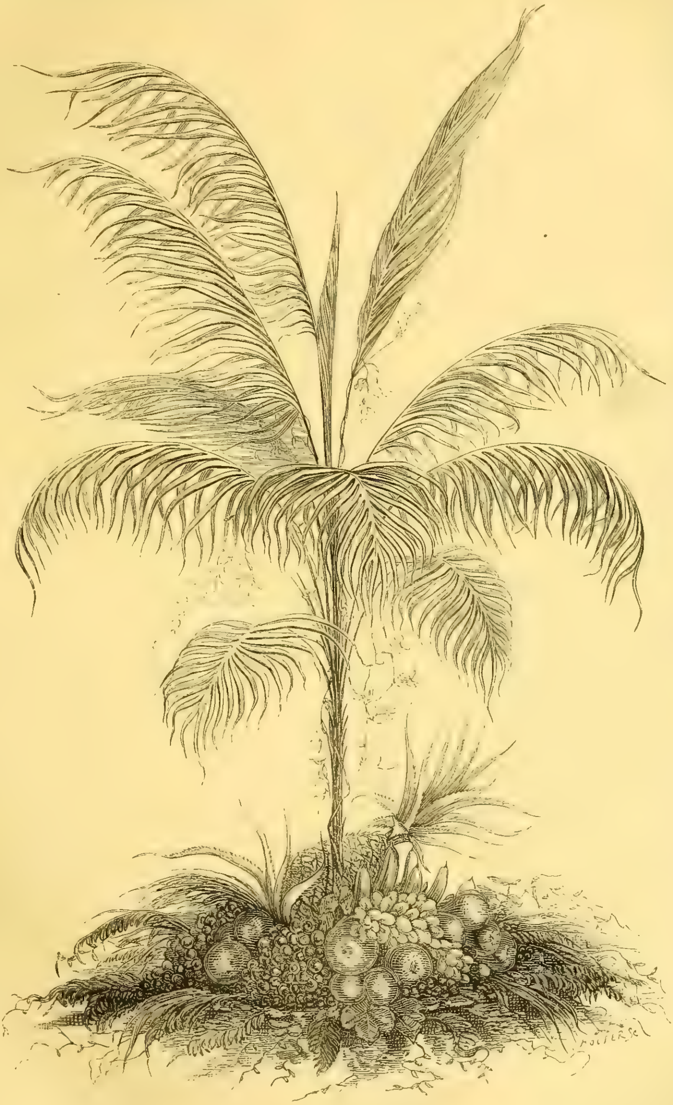
In a paper upon the natural history of southern and eastern China, published in the seventh number of the "Journal of the North China Branch of the Royal Asiatic Society" (Shanghai, 1873), the Abbé Armand David has given a brief sketch of the fauna and flora of those portions of northern and western China which he had visited. He observes:—"Some portions of the province of Pekin furnish Walnuts which have no husks. After several fruitless enquiries, Dr. Bretschneider procured specimens of these huskless Walnuts, of which he was so kind as to furnish some for my examination. They are of two sizes, the smaller measuring one inch, the larger one inch and a-half in length. The Nuts are rather thinner and more brittle than in the common Walnut, and their surface is curiously and irregularly eroded, presenting very much the appearance of sea-worn rock; the outer polished coat, in fact, is partly wanting and partly separable from the inner thin part, which it covers only in patches, and pieces of it can easily be detached by the nail. They show a tendency to split longitudinally at the side of the thickened keel formed by the junction of the valves; and the small-sized nuts (which are much thinner, indeed sometimes little more than coriaceo-cartilaginous in texture) along the middle of the valves also. Vertical and transverse sections exhibit the thin septa, and in all respects the structure of the ordinary form of Juglans regia, Linn., of which this is doubtless only a singular monstrosity. Except in size and the texture of the shell, I do not find anything to distinguish the two kinds of Nut sent, and this tends to show that too much stress must not be laid on size, or I may add form either, in attempting to discriminate species in this genus. M. Maximowicz has himself, whilst describing and figuring with his usual care the Eastern Asiatic forms he had examined, explained that their specific distinctness is at present uncertain. Dr. Bretschneider says this curious fruit is cultivated in the mountains to the north-east of Pekin. Neither Loudon in the "Arboretum," where thirteen pages are devoted to the Walnut, nor M. Casimir De Candolle in his "Mémoire sur les Juglandées," or in the monograph in the sixteenth volume of the "Prodromus," makes any allusion to a variety or monstrosity in which the epicarp is suppressed. There is no reference to such a deformity or abortion in Moquin-Tandon's "Tératologie végétale;" nor, indeed, says Dr. Hance, in the "Journal of Botany," though I do not pretend to have made a thorough search, have I been able to find a parallel instance mentioned of any single genus, in the books to which I have access. It seems, therefore, worth putting on record, if only for its singularity.

Prices of Nuts, Apples, and Pears.—According to Mr. Webb's account (see p. 40), there is a chance of realising a fortune by growing these fruits, provided the soil and locality are suitable for them after they come into what he terms "bearing order;" but what I want to know (allowing the trees to produce the quantities stated) is, where I can realise the prices quoted; such returns cannot be obtained in Covent Garden Market this season I am sure, as I can buy Cob Nuts at from 6d. to 8d. per lb. retail, or, rather, I could a few weeks back, and the highest prices that Apples of good quality, such as the Wellington and Blenheim, have realised, have been 4s. per bushel, and there has been a difficulty to obtain 3s. for anything inferior to these sorts. Pears, too, have been almost as bad. If Mr. Webb can inform me where such prices as those quoted can be realised I shall be grateful.—W. J. M., *Broadlands, Enfield.*

Town Gardening.—Having had a good many years' practice, I can fully endorse all that Mr. Anderson has said upon this subject. It is seldom the case that any system of culture is carried out in town gardens; in short, in place of neatness, which is, above all things, requisite in small gardens, untidiness is their prevailing characteristic, and instead of a few blooming plants and shrubs, Groundsel and other weeds often constitute the only kind of vegetation to be found in them. Nevertheless, considerable sums of money are sometimes spent on such gardens, but seldom in the right way. As regards the cost of keeping a suburban or town garden neat and tidy, size is generally the criterion; but I may safely say that from 10s. to £3 10s. per month will be the cost (according to size) of ninety-nine out of a hundred, taking the average run of the houses; but, of course, if glass has to be attended to, more cost will be incurred. As to plants, it is sufficient to say that a very large proportion of those sold by hawkers are grown to sell, and, as a rule, it is far better to deal with a nurseryman or gardener, who has a position to maintain, than obtain them from a man whom we may never see again. As to the class of plants used, that must depend on the amount to be expended; but, as a rule, expensive plants are not necessary, neither is it advisable to use any but such as stand smoke well, unless quite away from the town properly so called.—W. J. May.

DINING-ROOM DECORATION.

A very effective centre-piece for a dinner-table may be made by arranging a variety of fruits in Moss around the roots of a plant, either in or out of its pot. Palms, broad-leaved Grasses, and other plants, with graceful foliage, will bear being turned out of their pots without being injured by such treatment, provided their roots are quickly surrounded with damp Moss, and are thus not left exposed to the prejudicial influences, as far as they are concerned, of light and air. But plants in flower are very liable to shed their blossoms if their roots are in any way disturbed or exposed. The accompanying engraving shows one out of many ways of carrying out an arrangement of this description. The group here depicted is dressed to one face for a sideboard, and, upon a piece of furniture of a suitable size, has a very noble appearance. Palms, such as Geonoma gracilis and Cocos Weddelliana, or such Grasses as Gymnothrix latifolia, together with Dracænas, Cordylines, and other similarly graceful plants, are the best forms for this purpose. Any objectionable straight lines in their stems may be broken by sprays of climbing Fern, Myrsiphyllum, or Ficus minima. If the decorator should not be provided with two semicircular zinc trays, which, when placed together, form a ring around the pot of the plant, substitutes for this convenient contrivance will readily suggest themselves; and, when filled with Moss, and covered with fruit and Fern fronds, no one need know whether tumblers or finger-glasses, whether Strawberry punnets or soap dishes form the circle at the base of the centre-piece. An ingenious decorator is rarely at a loss for ways and means in the matter of receptacles for flowers and fruit; and many unexpected articles would present themselves to some people, if they were "behind the scenes" in table-decoration. The cook is laid under contribution for patty pans, dariole moulds, &c.; the housekeeper wonders what has become of her jelly glasses and salt cellars; and the butler misses sundry articles in his department, for some, if not all, of these are very likely to be helping to produce the much-admired general effect as regards decoration. If a centre-piece of this description is required for the middle of a dinner-table, such large fruits as Pines and Melons should not be used in it. All other kinds of fruit may take a part in an arrangement of this kind, and it is not necessary to confine the selection to eatable fruit; thus the sombre hues of Figs, Filberts, Russet Apples, and Beurré Pears, may be relieved by the more showy colours of the fruits of Solanum capsicastrum, Physalis Alkekengi, Holly, Arbutus, or Berberis, or by the scarlet seeds in the opening pods of the common yellow Iris. Such a group as this, arranged upon a small revolving dumb waiter in the centre of a dinner-table, presents a different outline to every guest; and if it be turned, very slightly at a time, several times during the dinner, every one has an opportunity of seeing a different view of it every time it is moved. W. T. T.



Centre-piece for a Sideboard.

COLOURS BY GASLIGHT.

In the arrangement of floral decorations for ball rooms or large assemblies of that kind, it should be borne in mind that they are mostly seen under strong artificial light, and that the amount of success attending the arrangement will greatly depend upon the selection of suitable colours for the occasion. Much as we admire the delicate markings of individual flowers by daylight, or the vein-like variegation on particular leaves, it by no means follows that flowers or leaves possessing such characteristics would be the most effective under the artificial light to which they would be subjected. I find that flowers of decided self-colours, such as the Calla, in the case of white flowers, and the Poinsettia, in that of scarlet, are even more effective under artificial light than during the daytime. But the blue Eranthemum, the purple Lasiandra, and all flowers, with mixed colours, are not nearly so effective under artificial as under daylight, while, as regards foliage, nothing surpasses the soft green of Lycopodium denticulatum for edgings or flat decorations, and Palms and plants of that kind for more lofty forms of decoration. All shades of green are effective, but in the case of variegated leaves the colours must be well defined to look well, as, when mixed in the leaf like those in the Abutilon Thompsonii, they have a sickly look. Partially shaded recesses should have a cool grotto-like appearance, and should be filled with Ferns and similar plants, while flowering plants and those possessing bright foliage may be more effectively grouped in more exposed situations under strong light. For the base of mirrors or window recesses, a bed of green Moss or Lycopod and dwarf flowering plants, such as Primulas, Cyclamens, and Dutch bulbs look well. These and small Ferns, Isolepis, and Panicums form a verdant spring-like combination. In wreathing walls of ball-rooms, great care should be exercised, as a too liberal use of wreaths, especially if at all bulky, gives a heavy sombre appearance to the room, and apparently reduces its height. Nothing that we have tried is so effective in all respects as long sprays of common Ivy, carefully removed from trees or walls, with the slender side-shoots intact and placed in its natural position, end to end, gradually reducing the size of the pieces towards the top of the room. In corners, round doorways, and in similar positions Ivy in this form may be used with advantage; it is light and natural, and lasts fresh for a long period. James Groom.

HEATED PLANT CASES.

I had for some years a plant case, 5 feet by 1 foot 6 inches, and 2 feet deep inside measure, heated by means of the following arrangement, which was perfectly successful, and, taking into consideration the fact that flowering plants are for many reasons unfit for small cases, where they would have to remain the whole year, I had no difficulty in growing anything I wished:—The bottom of the case was wood, 5 inches deep inside, and lined with sheet zinc. Close against the bottom corner all round, I fixed a 1½-inch wrought-iron gas-pipe, not in a complete ring, but closed where the two ends of the coil met. One end was turned up, and formed into a wide tube, to hold the excess of water from expansion, and to admit of filling, to compensate for loss by evaporation. From the lower side of each end of the coil descended two half-inch pipes, which were connected, one to the top and one to the bottom of a hemispherical copper boiler, 5 inches in diameter, 4 inches deep, the flat side being downwards. The holes, through which the pipes passed in the bottom of the case were rammed tight with soil, to prevent the fumes of gas entering. At first, I had a common floating night-light (oil); but this was afterwards replaced with a very small gas-burner, such as is ordinarily used for lighting purposes, consuming about one half cubic foot per hour. The plants were always kept in pots, or baskets, as, on account of the drawing towards the light, they need frequently turning round; and, also by re-arranging the plants, different effects may be produced. I tried Orchids for two years, but, although they grew tremendously, they did not bloom; and I, therefore, sold them, making a good profit, owing to their great increase in size. I then stocked the case with dwarf Palms, Dracænas, Cyperus alternifolius, and plants of that class, which were so satisfactory, and so little trouble, that I adhered to these almost exclusively for some years, exchanging the plants to advantage when they grew too large. The plant which gave most trouble was Cyperus alternifolius. It grew so large as to require dividing several times during the year, and numbers of large plants of it had to be thrown away for want of room. The case was afterwards removed into a warm room, which was constantly in use, and the heating arrangement was found then to be of little use, and was discontinued. To the best of my recollection, the cost of making the heating arrangement complete was about 22s. This was some ten years ago. No doubt it would cost twice the money now; but it was altogether a satisfactory arrangement, and gave no trouble in use. Thos. Fletcher, F.C.S.

Salvia Boliviensis verticillata.—This is one of the best of Salvias for winter flowering. Its brilliant scarlet blossoms are produced in whorls of eight to each spike. As is the case with Primula japonica, it continually throws out flowers from the whorls, and also freely from the laterals; and, if kept damp at the roots, it will remain in bloom for a considerable time.—R. H. B.

Seedling Beech for Hedges.—A peculiar character belonging to the Beech is, that whereas large trees drop their foliage in autumn, young plants, or those kept dwarf by cutting, retain it in a dry state until the young leaves are budding forth in spring. This renders them excellent subjects for hedgerows in nursery grounds or similiar situations, where shelter from wind is desirable, or for forwarding early crops of vegetables.—J. Groom.

THE INDOOR GARDEN.

SPRING PROPAGATION OF BEDDING PLANTS.

To raise a healthy progeny from unhealthy parents is just as difficult in the vegetable as in the animal kingdom; therefore, at this season, when going through the stock, it is far better to discard all weakly unhealthy plants, and thus leave more space for such as are robust and vigorous, than to retain them. Soft-wooded plants, if healthy, when placed in a temperature of about 60°, as the days lengthen make growth with surprising rapidity, and a very large number may be thus raised from a comparatively small stock. As regards the best means for propagation, few places are so well provided as they ought to be; and at the present time, in many private gardens, large numbers of plants for summer and autumn decoration are produced with very limited means. Verbenas, Fuchsias, and many other soft-wooded plants may be rooted with ease in pans of sand and water in from four to six days, placed on a hot flue, or any other warm surface, and kept close. The pans should be filled about two-thirds full of sand, and then just flooded with tepid water, the cuttings being laid with their bases just resting in the sand. One advantage this plan has, and that is, a very large number may be quickly rooted in a small space. As soon as roots are formed they must be dibbled into boxes of warm soil, and placed in a temperature of 60° to 65°, until established, and then moved on into cooler quarters; and so, in this way, where large numbers are required, a continual stream of healthy little plants is manufactured, and hardened off, by planting time. Another way—and one which I think is better, where one has the luxury of a propagating-house, however small—is to have a wrought-iron tank fitted on one side of the house, and a slate shelf, or stage, on the other. The tank should have a division down the centre; and a flow-pipe should be connected with one side, and a return pipe with the other, so that the heated water could flow round. The tank should be covered in with stout builders' slates, and have about 6 or 8 inches of sawdust, that has laid in a heap some time, placed on the top, and pressed down. As soon as the heat is fairly up, which will be in a few hours, a sprinkling of sand may be placed on the top, and the cuttings dibbled in. I believe this to be about as perfect a plant manufactory as can be devised, and—all things considered—as cheap; for although, in the first instance, an iron tank may be expensive, it will be practically indestructible, which is more than can be said of most materials nowadays. One of the reasons why sawdust is so valuable for purposes of propagation is, it is so easily kept in a regular state of heat and moisture without having frequent recourse to the watering-pot, and it is in this particular that the inexperienced so often fail. I need not say how valuable a bed of this kind would be after the spring stock was worked off for filling up again with Begonias, Justicias, Poinsettias, and other soft-wooded plants that are found so useful in winter for the conservatory and drawing-room. At other seasons, even in the winter, Dracænas, Ficus elastica, &c., might be rooted with certainty under such conditions. I have now a batch of Ficus—well-rooted little plants—that were put in a sawdust bed in the stove, in the form of single eyes, with a leaf attached to most of them. They were simply pushed into the moist warm sawdust thickly, less than a month ago. Of course, if anyone prefers having their cuttings in pots the sawdust then forms an excellent plunging material, always moist and steady in temperature. In these days, when both skilled and unskilled labour is advancing in price, a tank and bed of this kind effects a great saving, inasmuch as the cuttings are simply dibbled into the bed, and, as soon as rooted, are lifted carefully out and dibbled into boxes, thus doing away with the use of pots altogether, at least, in the case of bedding plants. Formerly, when it was the custom to pot off most kinds of plants, pots constituted a large item in the garden expenditure. E. H.

Strelitzia Reginæ Planted out in Conservatories.—Although generally grown as a stove plant, I find that this Strelitzia succeeds admirably planted out in conservatory beds where it gets plenty of root room, and an intermediate temperature. Under such conditions its foliage becomes large and effective, and the flowers are proportionally increased in size. Although this Strelitzia is not particularly serviceable as a decorative plant, in a small state it is highly effective; when well established in conservatory beds its peculiar colour and singular form of flower arresting the attention of every visitor, and well established plants are seldom without expanded flowers.—J. GROOM, *Henham.*

ALLAMANDAS.

THESE are magnificent free-flowering plants, natives of South America. Their large trumpet-shaped, yellow blooms are produced in great profusion during a long period of the year, and when well-managed, they can be had in flower from April until late in the autumn. They are especially useful on account of the many ways they can be grown, succeeding well as trained pot specimens, and also as roof climbers, planted out, or in pots. Their long uninterrupted habit of flowering renders them equally suitable for being grown in either way; the flowers are likewise well adapted for cutting, their colour harmonising agreeably with most other plants. They increase readily from cuttings of the half-ripened shoots, inserted in sand, with brisk heat in a propagating frame, or under a bell-glass; they can be struck at any time of the year when shoots can be obtained in the above condition; but about the beginning of March is the best, as then it gives time for the young plants to make considerable progress before the autumn. Put the cuttings singly in small pots; they will root in a month, when they should gradually be inured to more air, and, as soon as they have got fairly established, move them into 6-inch pots. Allamandas do best in good fibrous loam, to which add a moderate sprinkling of sand, and about one-sixth well-rotted manure; mix all together, using it for the plants in this stage moderately fine, pressing the soil firm in the pots; now place them where they will get plenty of light, in a night temperature of 70°, with a rise of 10° or 15° during the day; pinch out the points of the shoots, so as to induce the lower eyes to break, and give water all through the growing season, before the soil gets so dry as to cause the young growth to flag. Give a moderate amount of air in the middle of the day, and syringe every afternoon; but no shading is required, as all the species of Allamanda do better without it, making shorter-jointed stouter wood under the full influence of the sun, which does not injure their leaves if the glass is of good quality. Through the summer months the temperature should be 5° higher both day and night. By the end of June, the pots will be filled with roots, and they should be moved into others 3 inches larger. At this shift give ample drainage, using the soil in a more lumpy state, breaking the fibrous, turfy parts into bits about the size of Walnuts; again press it quite firm in the pots, as these plants will not do with it in a loose condition. Place four or five neat sticks in the pot; to these train the shoots, the points of which again pinch out to get them to break, and continue the treatment as to heat, water, and syringing overhead until the middle of September, when discontinue the use of the syringe; admit more air, and do not give water to the roots until the plants flag considerably; this will check further growth, and help to harden up the wood. Keep on treating in this way till the end of October, allowing the soil to become a little drier each time before water is given, so as to ripen the leaves; many of the earliest formed will now turn yellow, fall off, and little more growth will be made. The temperature for the ensuing ten weeks may be reduced to 60° in the night, with 5° more by day, only just giving as much water to the soil as will keep the green leaves towards the extremities of the shoots from shrivelling. Place the plants during this their season of rest at the coolest end of the house.

About the middle of January remove all the green shoots, cutting back into the ripe wood; turn them out of the pots. From the little water given for some time back the soil will most likely be very dry. To ensure its now being thoroughly moistened, immerse the balls in a pail of tepid water until the whole is wet through. If this is not done the new soil in which they are about to be potted will get saturated by the water required to moisten the ball through to the centre. After this is done return them to the pots in which they have been growing, and place them for a day in the stove to allow the water to drain off; then remove the old drainage and any loose soil that there may be about the surface, and at once put them in their flowering pots (these may be from 15 inches to 18 inches in diameter). Place in the bottom 3 inches of crocks to secure sufficient drainage, as they will need a deal of water. The soil should be similar to that already advised, but will be now all the better for being a little more lumpy. Use the potting lath freely, so as to ram it quite hard. These plants require the soil to be made as close as possible, more so than almost any others grown in pots. The best method of training Allamandas and other subjects of similar habit, when grown as pot specimens, is on a stout iron wire trellis, secured to three strong stakes inserted in the soil placed just within the rim of the pot. Such a trellis, 4 feet high by 3 feet in diameter, will be big enough for a large plant. As soon as the plants are potted, fasten the trellises in their places, and at once train the shoots to them, dispersing them evenly over about two-thirds of the lower parts; if they are tied over the top they naturally push the young growth from that point, and in afterwards bending them down to cover the trellis they are very liable to break out. The reason why Allamandas should be so far differently treated than most things, in cutting back and potting them before they have made any growth, is that the young shoots are so brittle that, in training them on the trellis, these are likely to be broken off, and the plants are naturally such free growers that it does not interfere with their after progress. When the potting is completed, instead of plunging them in a bed of tan, or other fermenting material, at a considerable distance from the light; they should be elevated on inverted pots as near the glass as the trellis will admit of. So placed the shoots will grow short-jointed and stout, the reverse of what they will be if stood further from the roof. Syringe overhead every afternoon. They will break into growth in about a fortnight; and as the young shoots advance keep them tied to the trellis in an upright position, as, if bent down before the bloom is well set, it induces them to break back, the points generally ceasing to push much further, which causes delay in the time of their flowering; as also a reduction in the quantity they will produce. As the advancing shoots require more head room, the plants must be regularly lowered, so as just to keep the points from touching the glass. At the beginning of March raise the temperature 5° in the night, allowing it to run up considerably with sun heat in the day. By the middle of the month, when the weather is very bright, it may be necessary to give for a short time in the middle of the day a little air by opening the ventilators about an inch or so; this will be enough, as if too much is admited it will seriously affect the young tender growth. It is at this season that careful attention is most essential to anticipate the rise in temperature through the sun's influence in fine weather by timely stopping the fires. It is an indication of the worst possible management in the cultivation of stove plants to be under the necessity of admitting large volumes of cold external air in the spring to keep down the temperature sufficiently through the inconsiderate use of fire heat. If a little air is given as above advised, when the thermometer rises to 80° in bright weather, no harm will be done by its going up 6° or 8° higher, if the atmosphere is kept moist, always closing the house sufficiently early and setting the fires going so as not to allow the heat to fall too low. As the soil becomes filled with roots the plants will require a copious supply of water and a free use of the syringe overhead. Towards the end of the month, if all has gone well, every shoot will have its point set with flowers; it is better to defer training until the blooms begin to open, after which the shoots ought to be carefully wound round the trellis, so as to distribute the flowering points evenly over it.

They will now need water almost every day, giving liquid manure two or three times a week, continuing the use of the syringe, which will not injure the flowers. The night temperature may now be kept at about 75°, with a rise of 10° in the day. They will quickly push up another lot of shoots, which, when commencing to bloom, should be trained as were the preceding; they will thus keep on through the season. Give more air and less fire heat as the summer advances. By the end of June the plants may, if required, be removed to a conservatory and placed where they will not be under the influence of a draught of external air; here they will form conspicuous objects until the middle of August, when they should be returned to the stove, where they will, if wanted, continue to flower for some time, after which they should be gradually ripened up, partially dried off as in the preceding autumn, and rested similarly. In January, as before, cut them back, and shake about half the soil from the ball, reducing a portion of the roots. Re-pot with new soil, and treat in every way through the season as advised previously. So managed the plants will last for many years. Allamandas are amongst the best of stove climbers, for which purpose they require to be treated as for trained plants, except dispensing with the trellis, and not stopping the shoots further than to induce their breaking, so as to furnish the allotted space; they should be freely cut back every season before they are started into growth. From their very strong habit of growth, even when required as climbers, it is better to grow them in pots than to plant out, unless they are wanted to cover a very large space, in which case they may be turned out in a border of limited extent, and the soil partially renewed each spring. The following kinds are all well worth growing:

A. nobilis.—A strong grower, with very large, finely-shaped, bright yellow flowers; requires a light situation to bloom it freely.

A. Chelsoni.—A profuse large-flowered kind, from Western Africa, almost as deep in colour as A. Aubletti, and has not the objectionable habit of the blooms reflexing, natural to that variety which it supersedes.

A. Hendersoni.—A very strong-growing, large, free-blooming sort; the base of the flowers internally suffused with brown.

A. Schotti.—A very strong grower, with immensely large pale yellow flowers that reflex a good deal. It is not so free in blooming as the others.

A. cathartica.—A well-known free flowering kind, with moderate-sized blooms, which it produces plentifully.

A. grandiflora.—A magnificent sort with beautiful bright canary-yellow flowers, produced in large quantities. It is very distinct in habit, and a much weaker grower than all the others, with smaller foliage, and is the most suitable for growing as a pot specimen, in which way it may with advantage be trained to sticks, dispensing with a trellis.

Insects.—Allamandas possess almost an immunity from insects, except a minute yellow thrips, which is very troublesome if once it gets a footing, as it destroys and disfigures the young flower buds and leaves. It is easiest kept under by copious and daily syringing, as it is most difficult to kill by fumigation. T. Baines.

IXORAS AND OTHER PLANTS AT BANGALORE.

In your last number (see p. 20) Mr. Baines gives an account of the best method of cultivating Ixoras, which, he says, "to grow well, must be subjected to as much heat as any plant in existence during the spring and summer, and to a temperature not lower than 65° in winter." He further states that "neither the atmosphere nor the roots should be allowed to get too dry." In the same number I gave a brief description of the climate of Bangalore, and it may not be uninteresting to know that Ixoras grow there as bushes (out-of-doors, of course), without any care or attention whatever. I. coccinea is, perhaps, the handsomest, and even, under such neglect, the blooms are very fine, but there are three or four others, the particular names of which I do not recollect, that bloom just as freely. During the whole of the hot dry weather, from February to May, these plants withstand the drought wonderfully, enjoying practically, in this way, a season of rest, and blooming freely after the first showers and during the monsoon. The Ixora at Bangalore is a hardy shrub. The Tabernæmontana is another that blooms continually in a very profuse manner, without the least care being taken with it, and the same may be said of some of the Allamandas, Jatropha multifida, Poiniana pulcherrima, Poinsettia, Cassia Fistula, which, however, is more than a shrub, and a great many others. Even under such neglect the bloom is abundant and of long duration, but this does not justify the neglect, even though a Poiniana pulcherrima shrub was observed to last in continual flower, day after day, for more than five consecutive months. Greater attention is now being paid to the shaping and cultivation of these "common or jungle plants," as they are not unfrequently called, with the special object of improving them and obtaining new varieties of them by skilful hybridisation. With the intelligent care that is being exercised in this direction there is no doubt that many a plant and shrub, now considered as out of place in a garden, will soon find an appropriate habitat there, and that horticulture generally will receive the attention which it deserves. There are probably few places where the climatic conditions are, on the whole, so favourable for advantageous cultivation, with a minimum of trouble, of a wide margin of plants between the alpine and the tropical flora, as Bangalore. The only wonder is that the neglect of these opportunities has been so great. Writing in the thick of a London fog, and in admiration of what is done under the difficulties of an English climate by professional and amateur gardeners, the wonder is greatly increased. J. P.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Germination Within the Fruit.—Can any of your readers recall an instance where germination has occurred in seeds in the Cucurbitaceæ or other Orders within the fruit, and, if so, under what conditions?—D. D.

Coprosma Baureana variegata.—This useful plant is not only very effective in summer beds, but is one of the best plants that can be employed at this season for edging plant-stands, jardiniers, or edges of conservatory stages. Its bold, distinctly variegated foliage and trailing habit render it a most desirable subject where decorative plants are in request during the winter months. It succeeds well in a cold house.—J. Groom.

Fungus on Date Palm.—With this I enclose a leaflet of a Date Palm for your inspection—you will observe upon it something like the spores on the back of a Fern frond. Would you kindly tell me what they are? The Palm in question was sent to me along with some other plants from Mentone last April; all its leaves were covered with spots similar to that I send, but the growth it has made since it came is clean and healthy.—W. W., *Eaglehurst*. [It is a Fungus very common on the older leaves of the Date Palm.]

TREES AND SHRUBS.

LEBANON AND ITS CEDARS.

The following notes on the Cedars of Lebanon, taken at a lecture, delivered in 1861, by Dr. Hooker, shortly after his return from Syria, may interest other readers besides Mr. Cornhill. I am not sure whether these lectures (there were three of them altogether, on the vegetation, &c., of Palestine) were ever printed; but Richard Oldham, who fell a victim to dysentry in China, and I, made a joint report, which I have preserved. The part relating to the Cedars on Mount Lebanon is, in substance, as follows:—The lower slopes of the southern Lebanon reach to within a few miles of Beyrout; the intervening country being dry and sandy, and the vegetation in consequence very scanty. The sea voyage to Tripoli (the nearest landing place to the Cedars) from Beyrout occupies about eight or nine hours, but in making the journey by land from the latter place, it took them (the late Mr. Daniel Hanbury was Dr. Hooker's fellow traveller) three days, although they rode twelve and fourteen hours a day. The length of time consumed in this journey was caused by the circuitous and hilly nature of the route they were obliged to take to reach the Cedars which lie in a north-north-east direction from Beyrout. The travellers encamped three days under the only group of Cedars supposed to be left standing on the Lebanon lying nearly due east from Tripoli.* From the Cedars, which are at an altitude of 6,000 feet, they made two excursions to the summit, the highest point here being 10,500 feet above the level of the sea. The Cedars, considered in their relations to other circumstances, afford some very instructive ideas. So far as the lecturer could ascertain from other travellers, and from his own observations, this is the only remaining group of Cedrus Libani standing on the Lebanon, though it is abundant on the Taurus, in Asia Minor. This group stands in a gentle undulating plain, of about 6 miles in width, and the trees are in several clusters or clumps, scattered over an area of about 3 or 4 acres. The trees are all growing on raised mounds of stones and detritus, called moraines, which affords them perfect drainage, thereby giving us a hint to plant Cedars in well-drained soil. The entire group consisted of about 400 trees. One of the largest measured over 40 feet in girth, and it was supposed that it could not be more than 400 years old. There were many small trees, but none of them were less than 8 inches in diameter, and probably none under forty years of age. The inferences respecting the age of the trees were drawn from counting the concentric rings in a tree (26 feet in girth) which was felled. The lecturer was decidedly of the opinion that all the trees in the group were, taking the extreme limits, between the ages of thirty-five and 400 years. Hence no credence could be given to the statement put forward by certain writers, that trees dating from the time of King Solomon were still in existence. Although thousands of seeds are produced every year, many of which fall to the ground, and even germinate, yet there are no plants younger than the age mentioned, owing to the dry heat prevalent in spring and summer, which scorches up all herbaceous vegetation. It is probable that, at the date of the youngest trees, there was a very wet season, or a succession of wet seasons, that enabled them to make their early growth. The wood of these trees was found to be a little more highly-coloured and closer grained than that of trees grown in this country, attributable, doubtless, to the slower growth of the former.

Enumeration of the Trees.—Clump 1.—Total number of trees thirty-seven. One tree 5 feet in diameter, thirty-six from 6 inches to 4 feet. This clump is long and narrow, sides steep, dovetailing into the surrounding clumps. Clump 2.—Total number of trees, ninety-five. One tree, 40¾ feet in girth, one 13 feet in diameter, one 11 feet, one 10 feet, one 6 feet, two 5 feet, eighty-seven 1 to 3 feet, and one 6 inches. This is the largest clump. On east side a chapel and a small out-house. The oldest trees are apparently here. Clump 3.—Total number of trees eighty-five. One tree, with split trunk, 37½ feet in girth; one solid, 28½ feet; one 8 feet in diameter, two 7 feet, one 5 feet, seventy-nine 6 inches to 4 feet. Clump 4.—Total number of trees seventy-one; all from 6 inches to 4 feet in diameter. This is the most circular clump. Clump 5.—Total number of trees seventy-two. Eleven trees are 4 feet in diameter, sixty-one from 6 inches to 3 feet. Clump 6.—Total number of trees twenty-five. One tree 5 feet in diameter, nineteen 1 to 4 feet, five under 1 foot. Clump 7.—Total number of trees, four. Clump 8.—One tree. Clump 9.—Total number of trees, eight.

W. B. Hemsley.

Sea-shore Live Oak.—"V." enquires what the Sea-shore Live Oak of America is. It is Quercus virens, an evergreen species of

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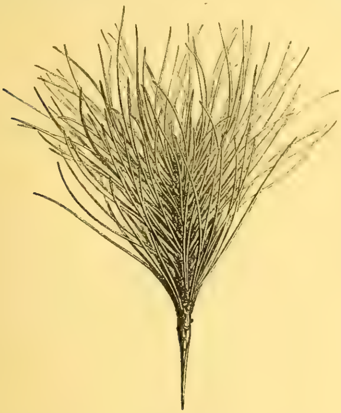
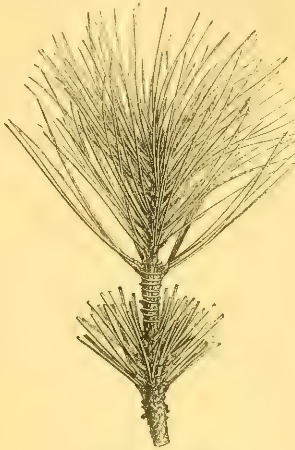
* I have some recollection of reading of the discovery, subsequently, of much more extensive Cedar woods in another part of the Lebanon.—W. B. H.

Oak not often seen in this country, although it was first introduced nearly 150 years ago. It is only in the southern Atlantic states of North America that it attains the dimensions of a timber tree, and it never grows to a large size; but it has the reputation of being stronger for its size than any other Oak. Northwards it dwindles down to a mere bush, and gradually disappears altogether.—W. B. HEMSLEY.

HINTS ON PROPAGATING CONIFERS.

CONIFERS may be multiplied by means of cuttings, layers, and seeds, while the golden or variegated forms of Taxus, Cupressus, Thujopsis, &c., are generally reproduced by grafting on stocks of their respective green-leaved or normal kinds. Seedlings form the best stocks, but where they are not at command, cuttings may be substituted. The common Larch forms a good stock for the Deodar, as does also Cedrus atlantica. The fertilisation of Yews and Cypresses is very interesting. It appears that a drop of clear mucilage is exuded from the orifice at the top of the ovule or young seed of these plants. The pollen grains fall on this mucilage, which retains them, and both mucilage and pollen tubes are absorbed into the interior of the ovule. Vaucher long since pointed out this fact; and his "Histoire Physiologique des Plantes d'Europe" contains much valuable information of peculiar interest to the intelligent propagator and hybridiser. Every one who raises Conifers from either home-grown or imported seeds is well aware of the diversity of colour and habit which the seedling plants assume. This is particularly observable in the Lawson Cypress; but Firs, Wellingtonias, Araucarias, and Piceas show the variation in a scarcely less marked degree; and many of the most beautiful forms of Yews, Firs, Cypresses, and Thujas have been originally either natural variations selected from the seed bed, or sports perpetuated by grafting the variegated branches on a plant of the green or normal form of the species as a stock. Up to the present time, I believe I am right in saying that we have no hybrid Conifers—that is, no garden hybrids raised by artificial fertilisation; for there can be but little doubt that Conifers, being mostly gregarious and furnished with such ample supplies of easily-wafted pollen, are often cross-fertilised or even hybridised in a state of nature; another point in favour of this cross-fertilising process having taken place is that imported seeds produce such a diversity of offspring. There appears to be no good reason why we should not raise hybrid Conifers in our gardens now that we have so many fertile or cone-bearing specimens of the rarer and more beautiful kinds; and I strongly urge those who have the opportunity to make experiments in this direction. By crossing the more beautiful and tender kinds with hardier species, we might obtain a hardier race; and if additional beauty of leafage or habit, so much the better. Again, some rare Conifers produce ample supplies of pollen before they bear fertile cones, and by using this pollen to fertilise older cone-bearing trees belonging to the same or an allied genus, good results might be obtained. Whether, however, success or failure is the result, the careful cross-fertilisation or hybridisation of Conifers is well worth attention from cultivators, as it appears to be as yet an untrodden path in horticulture. The genus Abies now includes the Lebanon, Himalayan, and Algerian Cedars. The fully matured cones should be gathered during the winter season, and exposed either to sun-heat or to the gentle warmth of an oven or kiln—this treatment being requisite in order to readily separate the seeds from the cones. The Firs give out their seeds very easily and quickly—much more readily than the Cluster and Stone Pines, which require the gentle application of heat for several weeks, or even months, ere their seeds can be separated from the close-scaled cones. The method of extracting the seeds from Cedar and other Conifer cones by splitting is tedious and often injurious to the seeds. M. Delépine, of Angers, states that the plan he adopts is much simpler and better. About February the cones are buried at a depth of 2 feet underground in sand; they remain there for a month or two, after which the cones scale easily without force, and the seeds are then picked out and sown immediately, and, having swelled, they germinate at once. In the case of all Conifers, seeds undoubtedly afford the best mode of re-production whenever they can be obtained; but in the case of rare and new varieties, grafting and cuttings have to be resorted to as auxiliary, and in some cases quicker modes of increasing them. The


Herbaceous Scion.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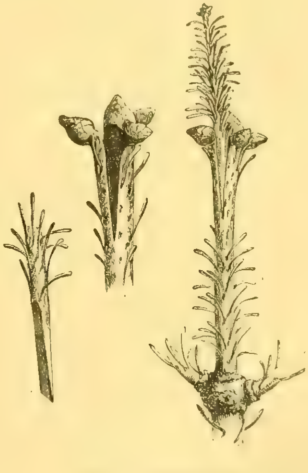
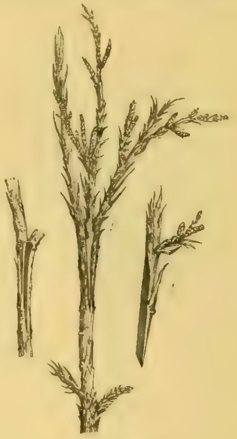

Terminal Bud Grafting.

cones of Cedars are very resinous when newly gathered, and ought to be left a year before the seeds are separated, much of the resin having during that period passed off by evaporation. The following experiments on the germination of Conifer seeds, made by Mr. J. Alexander, are recorded in the "Transactions of the Scottish Arboricultural Society":—"In the year 1870, twenty cones were gathered from each of ten different trees, whose ages were approximately ascertained by counting the concentric circles in other trees felled beside them. The cones were carefully opened, and all the seeds of the ten different sorts sown in separate beds, the result of which was as follows:— The seeds of twenty cones from a tree

300 years old	produced	10	plants.	100 years old	produced	173	plants.
250	,,	13	,,	50	,,	104	,,
200	,,	50	,,	15	,,	18	,,
150	,,	74	,,	10	,,	40	,,
125	,,	106	,,				

The same experiment was again tried in 1871 with other trees, when the result was much the same as in 1870. It will thus be seen that seeds gathered from trees between 50 and 125 years produce the greatest number of plants. In a paper on "Gathering the Cones of Resinous Trees," Mr. Ellison maintains by illustrative examples that the premature gathering of the seed tends to weakness in the plants. Foreign seed, he remarks, from the native forests, is invaluable when imported in the shape of fresh-gathered cones, secured from the trees at the end of the Alpine winter; but is not worth having if gathered prematurely. Curiously enough, other seeds have been found to be much improved if left on the plants all winter; and this is notably the case with Stock seed. The latter end of March, if mild, or the beginning of April, is the best time to sow all Conifer seeds; and it is an excellent plan to place the seeds in a bag and soak the bag in water for a day or two, taking care to dry the seeds in the sun before sowing. The rarer sorts are generally sown in pots, pans, or boxes of rich moist earth, and the protection of a pit or frame is given them until they have advanced in growth sufficient to be pricked out in lines in nursery beds. The more common and hardier kinds are, however, sown at once in nursery or seed beds a yard or 4 feet in with. The richer and more friable the soil the better; and the depth at which the drills should be sown must be regulated by the size of the seeds, say from half-an-inch to an inch, which, in the case of the larger and stronger kinds will be amply sufficient. If these seed-beds are sheltered by hedges of Yew, Juniper, Privet, or Beech, so much the better. The seedlings may be lifted about a year after they are sown, or in the April following, and pricked out in lines 6 or 8 inches apart, leaving a space of about an inch between each seedling plant; plants so treated will be found to have made considerably more progress than those left thickly in the seed-beds for two years, an old-fashioned plan still largely practised. As a rule, seedling Conifers should be lifted every year they are in the seed-beds, or until they are either sold or planted out in permanent positions either in woods or pleasure grounds. If seeds are not obtainable the next best mode of propagating Conifers generally is by cuttings made of the side shoots when the sap is active. They should consist of branchlets of last year's growth, say from 4 to 6 inches in length, with a heel of the old wood, which causes them to root better. Retinosporas, Taxus, Thujas, Thujopsis, Wellingtonias, Cedars, Cephalotaxus, Cryptomerias, Dacrydiums, Podocarpus, Cypresses, Libocedrus, Torreyas, and many other well-known Conifers, are readily multiplied by cuttings. The usual practice is to insert the cuttings or slips in pots, pans, or boxes of light sandy compost, and to place them in a cool shady frame at the back of a north wall or one having a northern aspect. The more tender species and varieties, however, strike quicker and with more certainty if pricked into pots containing small crocks and about an inch of sandy soil at the top. These, if placed in a genial heat of from 75° to 80°, will emit clusters of white fibrous roots in about a fortnight or three weeks; but they must be carefully hardened and potted off singly, after which they may be placed in a cold frame and finally planted out in the ordinary way. Seed, as I have said, is, however, undoubtedly the best method of propagating all Conifers when it is obtainable; and cuttings are better, as a rule, than grafted specimens, as the latter often throw out lateral leaders instead of terminal or erect ones, and these spoil the symmetry of the trees. Where the central leaders of Conifers do not start away freely, the lateral branches, especially those which grow faster than their neighbours, should be shortened in about October. This throws fresh vigour into the leader and preserves the symmetry of the tree. Many who can bud Roses and graft fruit trees with success, hesitate to operate on Conifers, and this without any apparent reason, except that the plants are a little different in appearance from those with which they have been accustomed to deal. This mode of propagation is, therefore, but rarely resorted to except in nurseries. All Conifers, if not too resinous, may be grafted as easily as a Plum or a Pear. Scions or grafts should be selected from the last summer's growth, and grafted on stocks of the same or nearly allied species any time during the winter months in gentle heat, the stocks being seedlings or cuttings grown in small pots for the purpose. Terminal grafting, of which the annexed are illustrations, is practised in the spring, taking the scions from the tips of the main branches in a herbaceous state. The scions may be 1½ to 2 inches in length, and should be inserted on the apex of a seedling or rooted cutting of an allied hardier or less valuable species as a stock. This operation is best performed in a heated close case; or, if in open beds, cloches must be used, and the operation must be deferred until the sap commences to move. Nearly all the species and varieties of Picea and Pinus are best propagated by means of grafts when seeds are not to be had. The Silver Fir makes an excellent stock for all the finer varieties. The numerous species of Pinus grow well on stocks of the different types to which they bear most resemblance. For example, such species and varieties as look like the common Scotch Pine grow well on that species as a stock; while P. monticola or P. Lambertiana, and their allies, do better on P. excelsa or on the Weymouth Pine. Cupressus Lawsoniana, which is readily propagated from seed, and is of clean habit, forms an excellent stock for the dwarf, dense, or variegated form of Lawson Cypress. Nearly all the Fir tribe take kindly to the common Spruce as a stock; while Biotas and Thujas, as a rule, succeed best on the Chinese Arbor-vitæ. In the "Révue Horticole," 1867, M. Briot states that Libocedrus tetragona succeeds as a scion on Saxe-Gothæa; and its habit, in consequence becomes changed into a wide-spreading head instead of forming a narrow cylindrical column. Chamæcyparis obtusa pygmæa, grafted on C. Boursierii, grows erect; while if worked on Biota or Thuja, or if propagated from cuttings, the plant spreads horizontally on the ground. Pseudo-Larix Kæmpferi is best propagated by grafting scions on its own root, moderately thick pieces well furnished with fibres giving the best results. This mode might be used with advantage in the case of other rare Conifers which are difficult to propagate by cutting. F. W. B., in the "Gardener."



Fork Grafting.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Berry-bearing Aucubas.—In order to induce the Aucuba to fruit successfully, graft or bud the centre branch of the female plant with the male kind. I budded mine. I have been long expecting to see combined male and female plants advertised; and have wondered that some of our nurserymen had not made this combination a feature in their shrub catalogues.—John Denny.

Chinese Primrose Princess Louise.—The blooms of this variety are of such a massive character as to render them quite distinct amongst a large collection in bloom here at present. Not the least of the many good qualities belonging to Primulas is that their beauty is greatly enhanced when seen under strong artificial light—a great desideratum in plants for winter decoration.—James Groom.

Wellingtonia gigantea.—A very fine specimen of this tree is growing in the nursery here in a thin, poor soil on the Greensand. It is a complete cone of verdure from base to top. Its stem is 42 feet in height, and its girth, at 1 foot from the ground, is 6 feet 8 inches; at 5 feet up, it measures 5 feet. The following were its dimensions in 1868:—Height, 25 feet; at 1 foot above the ground, 4 feet, and at 5 feet up, 2 feet 6 inches. From enquiries which I have made about the age of this tree, I find that it is nineteen or twenty years old.—George Berry, *Longleat.*

FENCES AND SCREENS IN PARKS AND GARDENS.

A more natural style of landscape gardening than once prevailed has, to a very great extent, abolished from ornamental grounds fences of the wall-and-hedge description, a fact which cannot be regretted, for fences are incompatible with that freedom of aspect which should always be aimed at in the disposition of ornamental grounds, either extensive or otherwise. In parks where cattle are admitted some kind of barrier is necessary to protect the plantations, but there are ways of accomplishing this now without resorting to the plain stone fence, or hedge, or expensive ha-ha—all of which are objectionable. Nothing more than the edge of the wood should denote the boundary line. If a fence is necessary a wire or iron one will, perhaps, be least expensive in the end, and it may be placed so as to be invisible to the ordinary observer. It is not unnecessary to state this much, for the very object of wire fences is frequently lost sight of in their erection. Only the other day we saw an ornamental plantation in the course of being railed off by a wire fence, which was rendered hideous by cumbrous sawn wooden posts placed every 15 or 20 feet apart. This is a common way of putting up such fences when the work is entrusted to those who know nothing whatever of their object. In other cases, where it is needful to fence park plantations temporarily, a strong but light fence is used, which does not offend the eye. In some very extensive domains we have seen, where the parks are tenanted summer and winter by highland cattle, not a fence is visible for miles from the mansion, but the fences are there nevertheless, miles and miles of them, and they consist of a few strands only of wire rope stretched upon rustic posts placed pretty widely apart, close to, and near the drives and avenues, quite within the margin of the plantation, so that they cannot be seen except they are looked for, and they follow every winding of the wood. Wherever the presence of fences is objectionable this plan will commend itself. It is only necessary to have wires strong enough, as cattle scratch themselves upon them and strain them. Where sheep graze, the wires must be closer at the bottom than the top. Such fences might be made to supersede sunk stone fences, which often enclose pleasure grounds and form boundary lines to plantations skirting the park; but as these are common, and cannot at all times be hid from the sight, the best plan is to plant the common Ivy on the top and let it grow down, which it will do readily and quite hide the stones. The Ivy can seldom be planted at the bottom of the wall, as a watercourse is generally formed there. In pleasure grounds, fences of any kind are hardly admissible at all, except as barriers or screens. For the first the wire fence of the lightest substantial description is the best, and for the second nothing surpasses hedges of Holly or Ivy—the latter supported, of course—and next to these comes the Laurel, the Yew, Bay, evergreen Oak, and Furze, all evergreen. The Holly hedge is the best of all, as well as the most ornamental, but it takes a long time to grow, and not a little keeping; nevertheless, it is worth all the trouble where a good fence is required. Where high buildings or other objects have to be hidden the trees should be planted thickly, and neither clipped nor topped. If they have light and air they will furnish densely enough to their base and form a complete screen. Some twenty years ago a hedge of this kind was planted, and now the trees are about 40 feet high, and form a perfect wall of great thickness. The Ivy hedge is soonest formed, and makes an impenetrable screen. Planted carefully in ordinary good soil, and supported by some substantial wooden structure of Larch poles, spars, or other materials, it will make a screen in a year or two. Laurels make a good hedge at first, but eventually get thin and unsightly at the bottom. The Yew has the same fault; still we have seen Yew hedges of considerable age, tolerably well-furnished to the bottom, and 20 feet through, clipped square at the top and sides. For some situations nothing is better or more ornamental than a fence of Furze. In the Isle of Man the excellent roads are a feature, and are only equalled by the hedges of Furze with which they are lined. The Furze is planted on low turf walls, into which the roots penetrate, binding it effectually, and the branches form a lofty and formidable barrier, that a man on horseback cannot see over, much less get through. Fences of Furze will grow where most other hedge plants will fail, and they will bear cutting and clipping if they are not wanted too lofty or straggling. The turf walls are first made about 4 feet high, with a broad base, and the Furze may be either sown or planted. Of deciduous hedges admissible in ornamental grounds, we need only mention the Lime, Lilac, Barberry, and Sweet Briar. The Lime, when kept low and clipped, forms a good screen, and is frequently used as such between villa gardens. Very good examples of Lime hedges are to be seen in the suburbs of London. The trees are usually planted against the boundary wall of the garden, and are kept below 20 feet in height by periodical clipping, which causes them to furnish laterally, and by trimming the sides also with the shears, a good square hedge some feet in thickness is formed. The trees should be planted of a good height at first. The Lilac makes a highly ornamental screen, but if it is wanted to flower, it should not be cut nor trimmed too closely. If it is not shaded by other trees, it will furnish freely enough to the bottom. Sweet Briar and Roses of the climbing section make a charming hedge, and the pretty effect may be heightened by introducing Clematises here and there. In forming such a hedge it is necessary to provide a rail or two at first in order to support the plants. Afterwards they must not be trimmed too closely, but only kept from straggling, and occasional young strong shoots should be laid in at the bottom to keep the hedge filled. In many gardens hedges are found very serviceable in protecting tender plants from cutting winds. Nurserymen trust to them largely, and some nurseries are a complete network of Beech, Yew, or Holly hedges. The Beech, as it grows quickly and retains its dead leaves on the branches all the winter, is the best for the purpose. The best arrangement of hedges for protection that we ever saw in a private garden consisted of a series of hedges about 5 feet high, running north and south, about 20 feet apart, with a good high Holly hedge on the north side as a base, and all open to the south. In these spaces many tender plants were hardened off in spring, and in summer they were filled with greenhouse plants that then required to be out of doors. They formed good nursery beds for various kinds of vegetables also; and fruit trees in pots were much safer between the hedges than on the open border.—"Field."

The Plane Trees in Piccadilly.—I have travelled Piccadilly to and fro every day for many years past, but, until quite recently, never noticed anything peculiar in the growth of the young Plane trees, planted in parallel lines just inside the Green Park. The peculiarity to which I allude consists in the stems of all the young plants inclining several degrees towards the east. Those in the row on the left hand side of the north path going west are more conspicuous in their inclinations than the others. Those planted between the Elms on the right hand side and near the iron rail fence are less so; but even there the inclination is quite obvious. The old Planes in the park and those on the footpath in Piccadilly seem to have developed themselves in the normal way, rendering the growth of the young ones still more singular. While writing, perhaps you will allow me to say that I trust soon to see the young Planes between the Elms removed as they are spoiling each other.—Strigulia.

New Golden-leaved Poplar (Populus canadensis aurea).—Our list of wholly golden-leaved trees is a short one; indeed I only know of three prior to the one now under notice, viz., Quercus Robur concordia, Catalpa syringæfolia aurea (which Mr. Rogers used last season at Battersea with such excellent effect in connection with Jackman's purple-flowered Clematis), and Mr. Richard Smith's Golden Laburnum, a really vigorous and effective golden sport from the common one. M. Charles Van Geert's Golden-leaved Poplar, judging from a coloured plate of it which I have seen, is a valuable sport from the Canadian Poplar. It is reported to have been produced spontaneously by a branch of the green-leaved type, on which it maintained its golden character for five years. Its leaves are described as being "quite as large as those of the common Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue. The stalks and the bark of the shoots become then dark red, which adds greatly to the beauty of its colouring." This new variety, if at all like the drawing, will be of the utmost value for grouping along with purple-leaved Beech and other ornamental trees; and young grafted plants of it ought, I think, to be valuable in summer garden arrangements and in subtropical gardens.—B.

PLATE III.

TEA ROSE, DUCHESS OF EDINBURGH.

It is many years since the veteran Rosarian, Mr. Rivers, of Sawbridgeworth, pointed to the Tea Rose (Rosa indica odorata) as that which would dispute the palm of public favour with the Hybrid Perpetuals. With softness and delicacy of colouring, combined, in the best varieties, with a beautiful form, especially in the unexpanded bud, the Tea Roses have for years been increasing in favour; but the drawbacks attending their culture in the open air, and the want of bright colours, have long been against them. The Tea-scented Roses, it is well known, are, with two or three exceptions, less hardy than the Hybrid Perpetuals; and to grow them out of doors in perfection, in Britain, requires some care and nursing on the part of the cultivator. In France, the Tea Roses do not seed nearly so freely as other families of Roses, and the seedling plants raised have shown much monotony of colour, and this generally of a light tint. Few varieties of merit, and distinct in colour, have hitherto been added to existing established kinds, compared with the rapidly increasing numbers of Hybrid Perpetuals. At length, however, a "break" has been made, and a Tea Rose of a rich brilliant colour has been obtained, and is now in cultivation. This distinct Rose, of which the annexed plate is a faithful representation, has been distributed by the Messrs. Veitch, of Chelsea. The Rev. Canon Hole says of it, "I admire the Rose, not only for its originality, novelty, and distinctness, as the only Tea Rose of its colour; but because I think it will prove a welcome acquisition as a plant in the conservatory, and as a cut flower in the bouquet." In habit, it is rather robust, forming a compact bushy plant, with smooth stems, having large thorns sparingly scattered over the branches; leaves, medium-sized, smooth, deep green; flowers, brilliant crimson, globular and abundant. It was raised in the south of France. I.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Plant and Fruit Houses, Pits, &c.—Both in the erection and arrangement of these amateurs often commit great mistakes. Even when they are of the least pretentious description, it frequently happens that they are so placed that it is impossible to work them satisfactorily. In the first place, however well a house may be constructed, as to convenience and general utility, if placed in a position where it cannot receive the fullest amount of light, no matter from what cause, the results can never be satisfactory. In considering this subject, it is necessary to bear in mind that in selecting a site for plant or fruit houses, it is not alone requisite to have them where there are neither other buildings nor trees that intercept light by standing at the sunny side of the houses to be erected, but also to place them far enough away from anything of this character that will obstruct light, although on the north, sunless side. In the cultivation of such flowering plants and fruits as require the protection of glass we must never forget that these, almost without exception, receive in their native countries more light than we in England can possibly give them, even in the best constructed houses, placed in the most favourable positions; the want of attention to this fact is too often the cause of continuous after disappointment. Take, for instance, the small conservatories or plant-houses attached to amateur's dwellings, instead of the well-being of the plants to be grown in them being made the first matter of importance, it is often lost sight of altogether, until it is found that little or nothing will grow in them. Such structures are frequently placed in a north or east corner, flanked on two sides by the walls of the building which overshadows them, the unfailing result of which is that the plants produce very little flower, and become in a short time mere shadows of what they ought to be. When a plant-house is built in such a situation it should be devoted to the growth of Ferns and similar shade-loving subjects, which thrive under such conditions, and, in the selection of the different species of Ferns for cultivation in houses so placed, amateurs will find that it is much the best plan to grow none but those which require a greenhouse temperature, as these will not only succeed better than stove species where there is a deficiency of light, but they need much less attention in all ways. Insects do not increase so fast upon them; and, where means exist of preparing flowering plants in other houses, some of these, whilst in bloom, might be introduced among them. In houses, situated as in the case just alluded to, it will be found much more satisfactory to thus confine the cultivation to such plants as will thrive in them than to attempt to grow such as cannot be induced to succeed. Another mistake often committed is to erect plant-houses against existing buildings that are very much higher than they are; for, even when placed at the south side of them, so much light is intercepted, that the plants become drawn by a continual struggle to get their heads to the glass. In situations of this kind Vines will do much better than flowering plants, but even they are better farther away from influences inseparable from such a position.

Span-roofed Houses Best.—For plants of any description there is no form of house equal to a span-roofed one, placed, if possible, with the ends standing north and south. In this case the inmates have little disposition to become one-sided or drawn; on the contrary, they maintain their natural character, and possess a robustness of health only attainable when grown under the influence of a maximum amount of light. Further, I may add, in reference to this form of house, that there is nothing equal to it, either as regards the health of the plants to be grown therein, the strength of the structure, or the cost of construction. Those elevations known as lantern lights, or raised ridges, extending, more or less, down each side, are in every way highly objectionable. A roof thus formed is, from its shape, inevitably weaker than a plain span, it is much more costly, the additional amount of material, whether wood or iron, excludes light, and much more fuel is required to keep up the necessary temperature than otherwise would be the case. Should the house be required for stove plants or even for occupants simply needing the exclusion of frost, the heat, immediately it is given off by the pipes, rushes straight up into this elevated portion of the roof, and quickly makes its escape. Such a form of roof as this is only suitable for a large conservatory attached to a mansion where something of the kind is demanded in order that it may harmonise with the design of the building with which it is associated and to which it is subservient. Under no conditions is it advisable to build lean-to houses, not even against existing garden walls that are no higher than the top of the roof lights, except for Vines, Peaches, or Cucumbers, that, from their nature need roof training and every ray of light that passes through the glass.

Heating.—As regards this amateur's structures are often deficient. The boilers, pipes, or flues are frequently so placed as to be uncertain and inefficient. The main objection to flues is their liability to crack, and allow smoke and gases to escape among the plants, and they also require cleaning out yearly. Where there are several houses, too, they render it necessary to have more fires than one, otherwise the working of them is simple enough, and the first cost is less than that of heating by hot water; taking, however, everything into account the latter method is best. The forms of boilers now before the public—many of them mere "differences without distinctions," yet each introduced as the best—are a complete puzzle to many, and those who are inexperienced in such matters are often induced to adopt such as are wholly unfit for their purposes. There is, however, one particular description of boiler that I would especially warn amateurs against, and that is those small kinds that are warranted "to heat with the least conceivable amount of fuel," and which are so constructed that they will not hold or can be set so as to hold enough material to keep alight for more than a few hours without a fresh supply. These are the most inconvenient contrivances ever invented. They are uncertain in their action, and require constant attention to ensure the exclusion of frost in severe weather. The best and most simple boilers that amateurs can employ, taking all things into consideration, are any of the improved "saddles," with a flue or flues running through them, and through which the heat traverses instead of rushing direct from the furnace up the chimney; these, when well set a little below the pipes, with room enough to hold a good body of fuel, will always be found to work satisfactorily. Another consideration of especial importance where several houses are to be warmed from one boiler, or where there is a likelihood that at any time more may be erected, is to place the boiler in the centre of its work, the houses or pits being right and left of it; where sufficient forethought has not been exercised in this matter, it frequently happens that serious difficulties arise. For similar reasons, the structure that will need the most heat should always be next the boiler, for, if this is not the case, a waste of heat must necessarily occur. In all cases none but the best valves should be used, so as to completely shut off heat when it is not required in any particular house. Another essential point is having enough piping in each house to keep up the requsite temperature without any strain upon the boiler; for, whenever it happens that the fire has to be hard driven, it is necessarily at a sacrifice of fuel. Unless under unavoidable circumstances, the pipes ought to rise, slightly and continuously, all the way from the boiler to the farthest point to which they extend;

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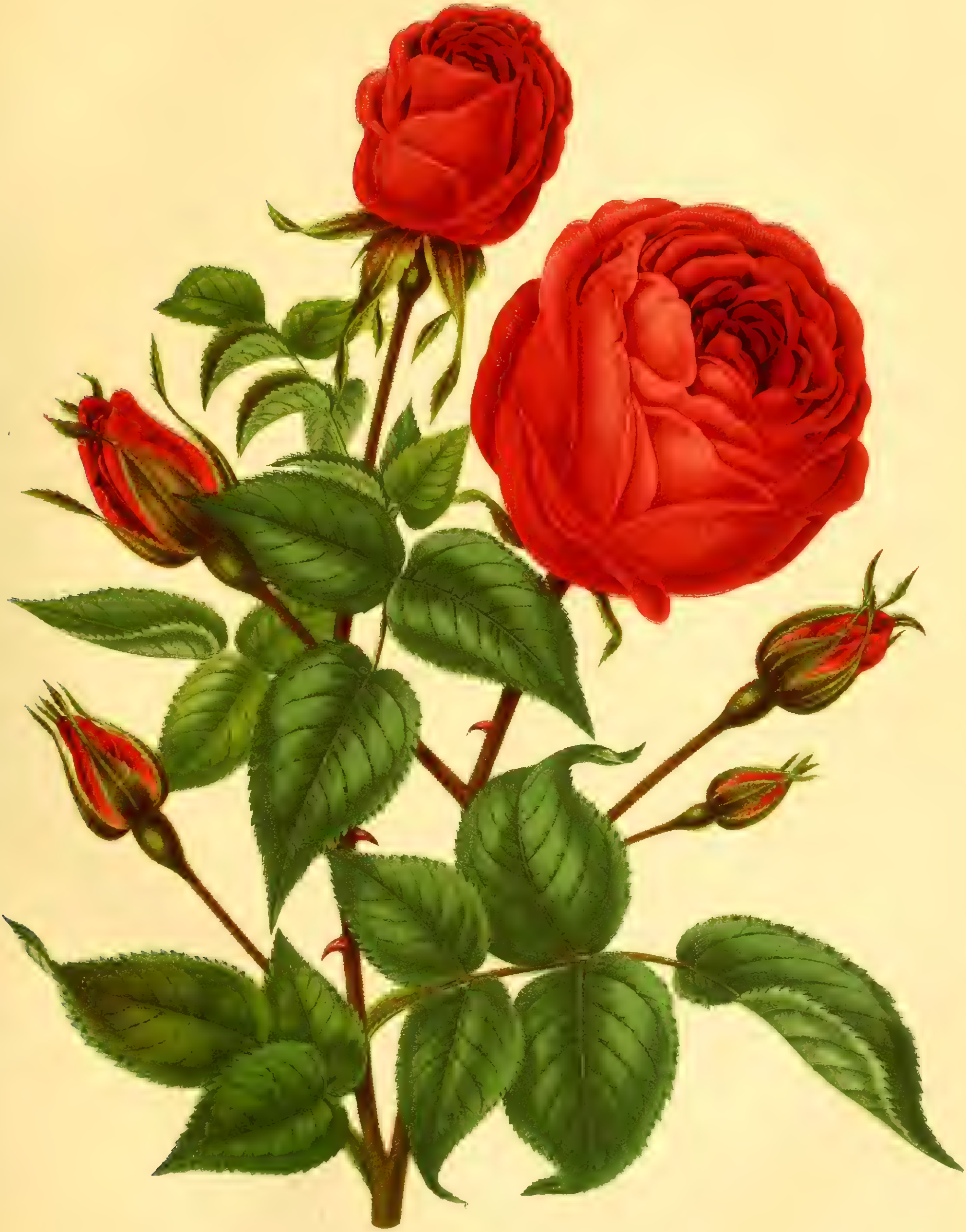


ROSE, DUCHESS OF EDINBURGH

and be so placed that they can be easily got at, in order to repair any leakage that may occur. Yet it often happens that considerable lengths of piping are laid underground, where they are inaccessible without a good deal of excavation, heating the earth for no purpose before they enter the house; whereas had the boiler been placed in the best position, both waste and inconvenience might have been avoided. Few of the gas-stoves, or similar contrivances, employed for heating small greenhouses, work long with any degree of satisfaction, a remark which also applies to such structures as are attached to dwellings, and are warmed from kitchen boilers or fires, that are used for another purpose besides that of warming the glass-houses in question, there either being too much or too little heat. Where, perhaps, the heating in this way is continually under the control of an amateur, who is enthusiastic in his attention to the flowers which he cultivates, success may be attained; but, where this work has to be left to others, the result generally is that the heat is off some severe frosty night; and the fruits of much time and care are ruthlessly destroyed. It is always better to have the heating apparatus for such places separate from anything else; this, even on the score of saving of fuel, will, in the long run, be found the most economical.

Conservatories.

In order to keep up a gay appearance in these it will be necessary to introduce into the forcing-houses or pits a constant succession of plants that, when in bloom, will stand in a comparatively cool temperature. Much harm is frequently done to creepers and other permanent occupants of conservatories by introducing stove plants and raising the temperature to suit their requirements. Wherever this is done it has injurious results, as the plants are kept constantly growing all through the winter, a time when they should be enjoying a season of rest. A temperature, ranging from 45° to 55°, will be ample just now for any conservatory, and will be found to keep plants much longer in bloom than if a greater heat is maintained. Plants in hanging-baskets soon become exhausted on account of the small body of soil on which they have to feed. The present is a favourable time for removing a portion of this and replacing it with good rich fibrous loam, which should then be thickly covered with Moss to prevent the sun and air playing too freely on it and robbing it of its moisture. For suspended baskets there is, perhaps, no plant so effective as Rollisson's Unique Pelargonium, which may easily be had depending from 3 to 5 feet, laden with bloom; and, when associated with a few plants of the old Ivy-leaf, or its more beautiful variegated form, L'Elegantè, it is perfection as regards grace and beauty.

Forcing Houses.

In these a temperature of from 55° to 65° will be quite sufficient for all purposes, and will suit the generality of plants better than a higher one. It will invariably be found to be more satisfactory to start early and force slowly than to urge plants rapidly on to the blooming period, as, when that is done, flowers are sure to be produced which have thin flimsy petals, and which, consequently, are short-lived. To assist them to stand in a cut state, or when removed to decorate the conservatory, they should, if convenience exists for so doing, be moved to a lower temperature just before the buds expand, and be kept well up to the light. This will not only greatly assist them as regards power of endurance, but will impart a brighter and more natural colour to them. Much needless forcing may be saved by selecting plants that naturally flower early, such as many of the Rhododendrons, Azalea amœna, Deutzia gracilis, the double Prunuses, Lilacs, and plants of that class. Among Rhododendrons, Altaclerense, Jacksonii, caucasicum, c. pictum, Cunningham's White, and Brayanum are the most valuable. All of these may be had in bloom with little forcing, while, for size and beauty of flower, they rival most of the later varieties. Brayanum, especially, is one of the grandest of Rhododendrons, having flowers of enormous size, fine in colour, and of the most perfect form. Such subjects as Lilacs, Weigelas, hardy Azaleas, Sweet Briar, &c., may be placed for a few weeks in almost any position where they can have the advantage of a little heat to bring them quietly on. Keep them constantly moist by syringing them with tepid water, and remove them to a light position as soon as their buds become well advanced. The beautifully variegated Acer Negundo variegatum makes a charming conservatory plant when forced, so as to get it early into leaf, as under such circumstances the variegation is much more pure and delicate than it otherwise would be. By introducing a few of these among bright coloured flowers or deep green foliage, such as that of the Camellia, they have a pleasing effect. Poinsettias going out of bloom should be placed in a dry, airy situation, where the temperature does not fall below 50°. Keep their tops entire, and give but little water, so as to induce the wood to become firm and fit for propagating purposes when wanted. Early flowering Pelargoniums, such as Alma, Solomon, Crimson King, Gauntlet, album multiflorum, and others of that class, should be placed on shelves close to the light to keep them from "drawing." A moderately dry atmosphere and a temperature ranging from 50° to 60° will just suit them. All the above will come in early in March, and will continue in flower for at least three months.—J. SHEPPARD.

Stove Ferns.

Preparations should now be made for potting such of these as require that attention. If the soil for this purpose is not already under cover, it should be immediately placed there, as it should not, under any circumstances, be used in a wet, cold state. Fibry peat and good yellow loam will be the only soils required for potting purposes, and the proportions in which these are used will greatly depend on the plants to be potted. Gleichenias, Gymnogrammas, Nothochlænas, and other tender kinds will require at least two-thirds peat, while other strong-growing varieties will be benefited by having loam in that proportion. Therefore, in breaking up and preparing the soil, it will be best to keep both separate, so that they can be mixed up when wanted in the proportions necessary to suit the requirements of the different plants to be operated upon. Where unsightly bare walls exist in Fern or other plant-houses, they may be quickly and beautifully clothed by planting in pockets attached to them, Ferns or trailing plants, such as Pothos argyræa, Cyanotis vittata, Panicum, &c. The pockets may be formed of clinkers, dipped in liquid cement a few times to give them increased strength and hide their objectionable colour, after which they can be attached to the walls by means of stiffer cement. Any handy bricklayer or garden labourer will be able to accomplish this in a satisfactory manner, and thus unsightly bare places under shelves or elsewhere may be turned to profitable account. Ferns grown in this way are much more effective and natural-looking than when grown in pots, and as they are invariably stronger, more fronds can be spared for cutting, in order to dress flower-vases, a purpose for which they are in great request in most places. Many of the most elegant drooping varieties, such as several of the Goniophlebiums, Davallias, Aspleniums, &c., only show off their beauty to advantage when planted out in elevated positions, such as may be prepared in the above manner, or when placed high on pedestals, or in tall vases. Plenty of ripe seed of most kinds may now be obtained, and where it is desirable to raise seedlings, no time should be lost in collecting and sowing it. In preparing pots for this purpose, they should be drained to at least a third of their depth with broken shreds or soft porous bricks, over which should be placed a layer of Moss. The pots should then be filled to within half-an-inch or so of their tops with some good fibrous yellow loam. This should be rammed firmly down, making the surface quite level and smooth, and on this sow the seed. After this is done, pieces of the frond may either be laid on it or the seed brushed out, so as to be equally distributed over the soil. Pieces of glass should then be laid on the top of the pot, to exclude air and retain moisture. The pots should then be placed in shallow pans of water, which must never be allowed to become dry, though an inch or so will be sufficient. Until the seeds vegetate, a light warm place must be chosen for them out of the reach of sunshine.—S. W. P.

Roses.

All Roses, intended to be planted this season, should now be planted while the weather is favourable. Plant also stocks and cuttings in beds. Renew stakes and poles where necessary, and commence to prune and train all climbing Roses. In doing this, it is advisable to remove all old ties and shreds, which are apt to harbour insects. Where standard Roses are planted in damp soils they will probably be found to be covered with Moss. In that case, mix up a pailful of water, soft soap, soot, and a little clay, the last to give the whole the consistency of paint, and paint over the stems and other parts affected with the mixture. This will kill the Moss and give the Roses a clean appearance. Tea Roses, covered up, should be opened during this damp weather and examined, in order to see that they are not suffering from confinement. Damp, in fact, does as much harm to Tea Roses as frost. Roses intended for cordons should be trained in that way, as opportunity offers, so as to get them to break evenly. Continue to manure and dig between Roses and Rose beds.—H. G.

Indoor Fruit Department.

Vines.—Vines started in the latter end of October and beginning of November will now be showing clusters of fruit; therefore thin them at once to the requisite number required, avoiding, in all cases, heavy cropping. Attend strictly to finger and thumb pinching; for, allowing shoots to grow so strongly as to necessitate the use of the knife is wrong. Tie in carefully as growth proceeds, pinching out all laterals, but allowing three or four extra leaves on the side shoots. Whether the shoots are stopped at the bunch, or two, three, or four joints beyond it is unimportant, so long as sufficient foliage is left to aid vigorous growth. Thinning may take place immediately the bunches can be handled. Avoid a too free use of the syringe and water-pot at this dull season; allow a little front air at night, when there is no frost. The top ventilators in our early house have never been moved, while front air has been kept on, with the exception of a few nights, since October. From 60° to 65° will be found to be a high enough temperature at night, letting it rise considerably higher by day. Prune Vines in late houses, immediately the foliage is off, retaining only shoots on which there are bunches; keep up a good circulation of warm air in houses in which Grapes are still hanging in order to prevent decay. Look over them often, and remove at once all bad berries. Give air on all favourable occasions, but keep the ventilators shut on wet and thick misty weather; prevent the temperature falling below 40°. If such houses are required for plants or need painting at this season, the Grapes may be cut and placed in bottles of water in the usual way. Place a few pieces of charcoal in each bottle, and fill them up with rain water; then suspend them in a suitable place in the fruit room, or in a Vinery that has been cleaned, kept well aired, and shaded during bright sunshine by a piece of frigi domo. Last year, Grapes were kept good here until the last Vinery was started, when they were thought by many practical men to be better in flavour than when kept in a fruit-room.

Pines.—Where early fruit is in demand, a selection of the most forward Queens should be brought together in accordance with the space at command. Remove all the short leaves round the base of the plants, and have all inert soil taken from the surface and replaced by a mixture of bone-meal and fresh turf, ramming it down tightly with a blunt-ended piece of wood. Take particular notice of the state of the balls as to moisture; have all the plants plunged in a tan bed ranging from 80° to 90°. Water such plants as may require that attention with guano-water of the same temperature as that of the plunging bed. Avoid a high atmospheric temperature at night; from 65° to 70° will be found sufficient during these dark nights. Let all forcing be done by day, husbanding the sun's rays when available. Damp all floor and wall surfaces, but avoid syringing overhead.—J. Hunter, *Lambton Castle.*

Peaches and Nectarines.—There is often much anxiety during this month, when Peaches are setting, especially where there is only one house to depend on for the early crop; Peach trees, which have been cropped for years, are often found to have become weakened in growth, and the fruit buds, which are thickly studded over the shoots, single, instead of being double, with a wood-bud between them. It is in such cases that the buds are liable to drop; and, when they are superabundant, it is not always in their favour. It has been a practice of ours, for years, to thin the buds, so that those best placed may have room to fully expand, and not tax the strength of the trees more than is desirable. Shoots, which have no young leader, seldom ever swell off any fruit; and it is best to cut them back to a plump bud, which is likely to form a good bearing shoot for next year. Where trees happen to cast their crop, they should be well cut in, and as many shoots led up as will take the place of the old wood cut out. If the borders are well renewed with rich soil, as before advised, and a good soaking of manure-water given (guano and soot-water, given clear, is excellent), the trees may be invigorated, and will bear well for many years; but where the flowers, or newly-set fruit drop from growth which has not been ripened, and that which is gross and green, stimulants would do more harm than good. The roots would then require lifting at the proper season. It may be mentioned—for the sake of beginners—that some kinds of Peaches and Nectarines do not force well. Caution, as regards fire-heat, is always of much importance, when early forcing is going on during damp and dull weather; 50° to 55° at night should be the maximum temperature till the fruit shows that it is swelling, and 60° should only be reached when the weather is mild and sun-heat husbanded. Air left on at the top of the structure, sufficient to allow stagnant moisture to escape and cause a gentle circulation of air, is always beneficial; but during severe weather this must be done judiciously. Thin out the shoots, and any leaders which are growing too vigorously at the expense of the others should be stopped. In the case of young trees which have started into full growth, all the strong-growing wood may be stopped, which will cause plenty of wood to start and form a tree of even growth. The side shoots are always preferable, and all disbudding should be done piece-meal, so that the least possible check may be given. The aid of a camel's-hair brush is often brought into use for circulating the pollen. It may be drawn frequently over the flowers, between eleven o'clock and two. Pruning, washing, and dressing the trees in succession-houses should have attention as early as possible, and where scale has been on the wood, two washings with warm soapy water or Gishurst compound is not too much. When once this pest is established in Peach-houses there is much difficulty in getting rid of it. Figs which are in pots and plunged in bottom-heat may now require liberal supplies of water, and if the pots are full of roots, manure-water, such as guano mixed with sheep's manure, may be used to colour the liquid; but putrid manure-water used under glass is productive of much evil. Any shoots taking the lead should be stopped in time, and as Figs make large foliage, they are easily overcrowded; 50° to 55° at night should not be exceeded, and if fruits set very thickly they should be thinned before they thin themselves. Leave the earliest and largest of the fruit; stop established trees at every fourth leaf; and press the points instead of breaking them, which will prevent bleeding. If scale appears, prevent it from becoming established by washing the young wood and leaves with warm water.

Cherries.—If Cherries are wanted in May, now is a good time to commence forcing them. But they must have little more than protection at first, and 40° to 45° should not be exceeded, except when the temperature rises naturally, when, of course, it cannot be prevented. Syringing them with tepid water and giving fresh air at all times are important matters where Cherries are forced. An even temperature must, as far as possible, be maintained, and shading must be avoided. If the trees have been prepared in the manner recommended for Figs and the pots are clean, properly drained, and top-dressed, a crop of Cherries is easily secured. Failures arise from attempting to force the trees too rapidly. A fine display of fruit-buds which open well is no guarantee of success, and in most positions on open walls we often find favourable appearances of this kind to be succeeded by failure.

Orchard-houses.—These structures are most valuable when they are managed so that a long succession of crops may be supplied by having the earliest and latest fruits under cultivation; but where there are no means of keeping out severe frost, it is useless to attempt anything like growing early fruit in orchard-houses. Where trees were replanted or placed in fresh pots they will require nothing at present; but where the crops have to depend in a great measure on nourishment furnished during the fruiting season, all that is useless in the shape of old surface dressings and inert soil should be removed, and a dressing of good loam, well mixed with a portion of bone-meal and rotten manure, should be laid over the roots. If the house is not in use for protecting vegetables and storing plants the fruit trees may be put in their places, and sufficient water given to prevent the soil from becoming very dry. All necessary pruning, and washing the trees should be finished this month.—M. Temple.

Forced Vegetables.

Cucumbers may be benefited by an increase of temperature when the weather is bright, but, where pipes or flues have to be made excessively hot to keep up the temperature, it is better to allow the thermometer to fall, as being by far the least evil of the two. At night 70° is a good temperature, but winter Cucumbers are often obtained where a temperature of 60° could not be maintained during severe weather. Where structures will allow a covering of mats or other material to be placed over them at night, much help may be given to keep an even temperature and save fuel. Surfacing with turfy loam must be attended to, as the roots come through the soil. Except when there are many roots in a limited space, and cropping has been heavy, stimulants are seldom necessary at this season. A healthy, moist atmosphere, free from impurities arising from the heating apparatus, &c., and a steady bottom-heat of not more than 85° are essential, while the days are short and dull. Seeds may now be sown for spring crops. If manure is employed for heating, it should have been well sweetened by turning, and the lights allowed to remain open a quarter of an inch at the top to allow the steam to escape; use small pots, with single seeds sown in the centre of each, light turfy loam, and leave space so that an earthing may be given to the stems of the young seedlings, as they root freely upwards, and when a second shift is given or the plants are placed in the beds permanently, abundance of feeders will be ready to run into the fresh soil. Little can be said to supplement the directions previously given with regard to other vegetables now being forced. French Beans may be brought forward in quantity, keeping up successions by sowing at least every three weeks. Careful watering and plenty of light are of much importance in cold and changeable weather, and a little air should be given daily when the weather will permit. Give heat, as for Cucumbers, to Tomatoes swelling fruit; and the roots confined in pots may be helped by guano-water. Allow the flowers to be freely exposed to light, so that they may set freely; reduce the bunches to three fruits each, if they are wanted large; and allow none of the plants to become crowded, or to shade each other. A temperature of 60° to 70° will suit for the present, and as low as 50° on mornings when the weather is very severe will do no harm. Seakale, Rhubarb, Chicory, &c., should be brought forward by having several successions going on at one time, so that hasty forcing should not be had recourse to. Mushrooms are generally plentiful at this season; but successional beds should be coming forward to yield supplies when earlier ones cease bearing. When beds are bearing very freely, a very low temperature may be allowed. Last winter, we had excellent crops gathered from beds where the temperature of the house was often at 40°. Potatoes, Carrots, and Radishes, must have abundance of air, and be as near the glass as possible. Avoid exposing the crops to frosty winds, but air should be given whenever the weather will allow it being admitted. Succession beds of the two latter may be sown. Potatoes may be put on turves, Moss, or in pots, to sprout preparatory to planting. They must not be hurried, as small useless tubers only would be the result. Get a few potfuls of Herbs, such as Mint, Tarragon, and Fennel, or any sorts required, placed in gentle warmth. Give a soaking of water at 95°, to start the roots. Bottom-heat and a moderate top-heat will give strong produce; but they grow freely in almost any position.—M. Temple, *Impney Hall.*

Kitchen Garden.

As the sowing season is fast approaching, lose no time in procuring a supply of seeds, in order that they may be at hand when wanted. Good seeds, rather than cheap ones, should be sought after, as a good seed-bed is invariably the precursor of a good crop. As to the variety of each kind of vegetable best worthy of culture, amongst the many novelties and synonyms of recent years it is somewhat difficult to decide. I shall, therefore, not attempt to give any precise list, but, as occasion requires, name those that, in my own experience, have proved the most valuable. Every week, now, will bring its own work, and, in order to keep pace with the season, let all arrears in the way of trenching, digging, and manuring have attention at once; not necessarily rich, but deep culture is essentially required for most kinds of vegetables, deep culture enabling them to withstand drought better than all the manure that can be used. Trenching, therefore, should not be done grudgingly, as the little extra labour now required in performing it will be repaid with interest during the coming summer—first, by little or no watering being needed; secondly, by less weeding and hoeing being necessary; and, lastly, by the growth of more succulent and sweeter vegetables. Plots of Winter Spinach that have been picked from for some time, should, on the first opportunity, have the surface soil slightly forked up between the rows, the beneficial effects of which will soon be seen in the renewed vigour of the plants. The past autumn was too wet for this crop, and hence the many complaints made of its failure; on our dry soil it was never better. The round-seeded kind may now be sown between rows of Peas, and will come off before it is of any detriment to that crop. Earth up and stake Peas; a few Spruce Fir or Laurel branches intermixed with the ordinary stalks form good protectors from the weather. Another sowing of first and second early kinds may now be made, such as William the First, Advancer, and Best of All. The following may also now be sown on a warm sheltered border, viz., Early Horn Carrot, in drills 9 inches apart; Early Frame Radish, in the same way; Lettuce, Cauliflower, Cabbage, and Savoys, in drills 6 inches apart. In fine weather stir the soil between rows of Cabbages, fill up from the seed-bed all gaps, and make fresh plantations at any time when ground is at liberty for that purpose. Green crops are always acceptable; and, even should they not be required, they may be dug in as manure, a purpose for which they are of considerable value. Protect with litter, leaves, or Bracken, the stools of Globe Artichokes; and, as soon as all danger from severe frost is over, lift and divide them, selecting the strongest crowns for re-planting in light rich soil. This mode of culture ensures, during the season, a never-failing supply of large plump heads. New plantations of Horseradish may now at any time be made. The ground should be deeply trenched, and a good layer of manure put at the bottom of each trench; for planting, select straight stems from 6 to 9 inches long, and plant them deeply with a dibber, in rows 2 feet apart, and a foot asunder in the row. At this season lift all Brocoli as it becomes ready for use, there being no certainty as to what the weather may be. Continue, also, to protect Lettuce and Endive; the latter should be tied and lifted when dry, and put in a Mushroom-house or in some other dark dry room or shed, to blanch. Plant a few Chicory roots occasionally, according to the demand, in sand or dry soil, in similar places, and keep up a supply of Mustard and Cress by frequent sowings in shallow boxes. Mint and Tarragon, if in request, may be potted and grown in any spare corner of the forcing houses. Prepare manure for the forcing of further supplies of Asparagus, Seakale, and Rhubarb; the former is best lifted and grown in pits or frames, but the two latter should be covered with pots, and forced where they grow. A hot-bed should also now be prepared for raising seeds of Capsicum, Cucumber, Celery, Cauliflower, Lettuce, Tomato, &c., after which it may be utilised for a crop of Early Horn Carrots or Six Week Turnips.—W. Wildsmith.

THE FRUIT GARDEN.

THE CHERRY GARDEN.

The Cherry, like most of our fruits, came originally from Asia, and, like all trees from warm eastern countries, produces its blossoms early in the year, a circumstance which makes them liable to be destroyed by spring frosts. Any good ordinary soil suits Cherries, but light sandy loams answer best for them. When worked, however, upon the Mahaleb stock, they thrive in any kind of soil, and even luxuriate in strong clays; in fact, anyone with a spare corner, no matter what the soil is, would find a Cherry on the Mahaleb do well. As nearly all the sorts form handsome pyramids, and bear abundantly, I would advise this mode of training, as they can be confined to a small space and protected by netting. All the sorts are well calculated for planting against walls, and any aspect will suit them, but the more the south is deviated from, of course, the later the Cherries will be; so that where a succession is wanted it is well to have some upon all aspects. They may also be advantageously cultivated as dwarf bushes, pyramids, standards, or dwarf-trained, either upon walls or espaliers. As bushes and pyramids, when worked upon the Mahaleb stock, they are most prolific, and the fruit is generally larger, and a little later from it; all the tribes of Cherries succeed admirably on the Mahaleb, and can be kept in small compass as dwarf bushes; planted 5 to 6 feet apart each way, and covered with fine netting, the fruit can be preserved until thoroughly ripe. By a proper selection of sorts, as given below, the Cherry may be had in perfection from June till September; and, by adding the Morello tribe, from walls, until Christmas. I may add that Cherries cultivated on the Mahaleb stock, if occasionally lifted, will keep within a small space for many years. The branches require to be annually pinched back so as to cause them to produce fruit-buds close to the main stems, and also to keep them within reasonable bounds. The Morello is particularly suited for north walls, but it will bear heavy crops as standards, pyramids, or bushes. This variety of Cherry requires to have half its branches well cut back every year, and the other half left to bear fruit, as it is mostly upon the young wood that it is produced. All the Bigarreau and other large-leaved Cherries require, when trained, to be laid in very thinly, so as to give the foliage room. Some, however, lay the branches in from 9 to 12 inches apart, and depend upon cutting back for space to enable the young wood to be nailed in. Pyramids require very little pruning generally; shortening over-luxuriant shoots once a year in summer, and a due regulation of the branches in winter, are all they require. As standards they grow thinly and bear so abundantly that over-luxuriance is checked, and pruning is not much required. In forcing Cherries very little excitement is requisite, but plenty of air at all times. The following varieties, which are sufficient for ordinary purposes, are all of first-class quality and productiveness, and have been selected with a view to ensure a supply of fruit for cooking and dessert extending over the longest possible period:

Adam's Crown.—A medium-sized fruit, allied to the Geans, ripe in July. The fruit is of a pale red, and the tree a good bearer. One of the best of the early sorts.

All Saints'.—A distinct variety of the Kentish class; the fruit is small, agreeably acid, and useful for cooking. The tree is very ornamental in appearance, and suitable for shrubberies.

Baumann's May.—A fine Gean, attaining maturity in June. The fruit is of a medium size, deep red in colour, and of the finest quality.

Bigarreau de Hildesheim.—A fine Bigarreau, ripening in September, and therefore valuable for its lateness. The fruit is of medium size, pale yellow on one side and deep red on the other, and of good quality.

Black Eagle.—A fine black Gean, ripening in July. The fruit is of a rich purplish colour, medium-sized, and very rich, juicy, and delicious.

Black Tartarian.—A large and handsome variety of the Black-Heart class, ripening in June when against a south wall. The fruit is of a deep blackish colour, and of the finest quality; one of the best for walls and forcing.

Bowyer's Early Heart.—A rather small Bigarreau, ripening in June. The fruit is pale in colour, but excellent in quality; valuable for its earliness.

Buttner's October.—A large Cherry of the black class. The fruit is of a fine reddish-brown colour, and of good quality for cooking. Valuable for its lateness, ripening, as its name indicates, in October.

Buttner's Yellow.—A medium-sized Bigarreau, attaining maturity in August. The fruit is of a pale amber colour, and good in quality.

De Charmeux.—A late variety of the Morello, with milder flavour. The tree forms a handsome pyramid, and bears abundantly.

Frogmore Early Bigarreau.—A large handsome variety of the Bigarreau class. The fruit is of a fine deep red on the sunny side, and of the finest quality; and the tree is a most excellent bearer. It is as early as the May Duke, and, therefore, most valuable for its earliness.

Governor Wood.—A fine Bigarreau ripening in July. The fruit is large, pale yellow mottled with red, and of excellent quality.

Imperatrice Eugenie.—A large handsome Cherry, closely allied to the May Duke, but earlier. The fruit is of a rich red colour, very sweet and juicy, and altogether excellent. It is one of the best early Cherries we have.

Kentish.—A well-known variety of medium size, ripening in July, and of the bigest value for cooking purposes.

Mary.—A large and handsome variety of the Bigarreau class, ripening in July. The fruit is bright red in the sun, yellow in the shade, and of splendid quality.

May Duke.—A fine well-known variety of the Black Duke class, ripening in July. The fruit is large, of a fine deep red colour, and first-class quality. One of the best Cherries in cultivation.

Morello.—This also is one of the best-known Cherries we have. The fruit is of large size, fine deep colour, and for cooking of fine quality. It is one of the best for training to north aspects, and by protecting the fruit from the birds it may be left on the trees for a long time after it is ripe. It may also be grown as standards most successfully.

Reine Hortense.—A very large and handsome variety of the Red Duke class, ripening in July. The fruit is of a brilliant red colour, pleasantly acidulous, and of fine colour.

Werder's Early Black.—A large variety of the Black Gean class. The fruit is of a fine deep colour, very sweet, and of excellent quality. It ripens in June, and can be recommended for its earliness.

The best six varieties we have for small gardens are Baumann's May, Black Tartarian, Frogmore Early Bigarreau, Kentish, May Duke, and Morello. John Scott.

Merriott.

APRICOTS IN THE OPEN GROUND.

The cultivation of the Apricot tree, especially in the open ground, is like a lottery—nothing is more uncertain. Of all the kinds of fruit-trees in general cultivation, it is, without contradiction, the one of which there is the greatest risk of seeing the crop fail; and that is easily accounted for. As it blossoms most usually in the middle of March, and sometimes earlier, its flowers are exposed to the late frosts which are frequent with us. It may, it is true, be grown on a wall, and protected with covering in bad weather; the chances of injury are then lessened, although not altogether avoided; yet, even so, what a difference there is in the quality of the fruit, which only attains its highest perfection of flavour when it has a full and free supply of open air and sunshine! In addition to the damage which a severe season will everywhere inflict on the blossoms of the Apricot tree, the tree itself will also certainly suffer from it, if the ground is cold and wet. In such soil it will push to excess during the summer, the wood will not have time to ripen properly, and, however slight may be the degree of inclemency of the succeeding winter, it will be liable to be injured so seriously that you may be obliged to cut away almost all the new wood. In the case of soils of this kind, there is a remedy of certain efficacy, and one which will enable us to succeed with our Apricots—not, however, without some expense. Dig holes 6½ feet across, and 3¼ feet, at least, in depth. Fill them half-way up with bushes or faggots, small stones, or, better still, with brick-rubbish; plant the trees in these holes, covering the roots with good soil, just as in any other kind of planting; be careful, above all, not to bury the tree too deep; once planted it should stand on a little eminence. The materials underneath form an excellent drainage. The wood will then ripen properly, and you may reasonably expect a crop one year out of three. That is not much, to be sure, but from the Apricot tree you must hardly reckon on obtaining more. The Apricot is usually grafted on the Plum; the Black Damson and St. Catherine are the best stocks for this purpose. It is seldom grown on its own roots, as it attains a greater degree of vigour when grafted on the Plum tree. With the exception of the young wood, which is treated in the same manner as that of the Peach tree, all the other branches of the Apricot tree may be pruned in the same way as those of the Pear tree, always leaving them a little longer. The different kinds of Apricots vary but little in their time of ripening. The earliest do not ripen before the end of July, and the latest seldom pass beyond the middle of September. The following is a selection of the best kinds, given as nearly as possible in the order of their ripening:

Rouge precoce (Angoumois).—A fruit of excellent flavour, unsurpassed for forming delicious preserves. Ripens in the end of July. Tree, a most abundant bearer.

De Montgamet.—Somewhat larger than the preceding. Ripens in the end of July. The tree is very productive, and the leaves are more fringed near the stalk than in any other variety, a character by which it is easily distinguished. The fruit is generally used for preserving, and must be allowed to ripen well, when intended for the dessert.

Roman, also called Common, being the most extensively cultivated of all the kinds. It is almost always grown in open quarters, where it yields enormous crops in favourable seasons. In some localities it is grown on a most extensive scale, as it makes an excellent marmalade. Ripens in the middle of August. The tree is both vigorous and productive.

Royal.—Raised fifty years ago at Paris, in the gardens of the Luxembourg. A first-class fruit, ripening in the beginning of August. Tree productive, and very vigorous.

Peach.—An old variety, very productive and vigorous, well adapted for planting in places exposed to the wind—more so, perhaps, than any other kind. On a wall, it is hardly necessary to say, that, although the fruit is larger and handsomer, it is not so good. This remark applies to all the varieties of Apricots in every locality. Ripens in the end of August and beginning of September.

Jacques.—Recently introduced. An excellent fruit, of rather small size, produced in abundance, and ripening in August.

Viard.—Another new variety, of good quality, ripening in August. Tree very productive. It is a pity that such an excellent fruit has the defect of sometimes ripening imperfectly, one side being frequently found thoroughly ripe, while the other side is quite green.

Pourret.—About forty years in cultivation. An excellent fruit, rivalling the Peach-Apricot in quality. Ripens in August. Tree a good bearer.

With regard to the observations which I have made respecting the chances of obtaining a crop, all the varieties I have just mentioned may be grown as standards. For a wall, I should give the preference to the last five, which yield the finest fruits; and, as Apricot trees are not averse to warm aspects, they may be planted facing the south or west.

The pyramid form is not much used; it may be employed, however, but then the soil must be dry and well-drained.

Bourg-la-Reine. F. Jamin.

[The preceding is written by a very able and experienced cultivator, and is based on experience in the north of France; but, inasmuch as the Apricot is grown here and there as a standard tree in the market gardens of western London, it is probable that its culture away from walls on warm soils in the southern counties would be attended with a good result. Therefore we think M. Jamin's advice will be useful to such as are inclined to experiment in the matter.]

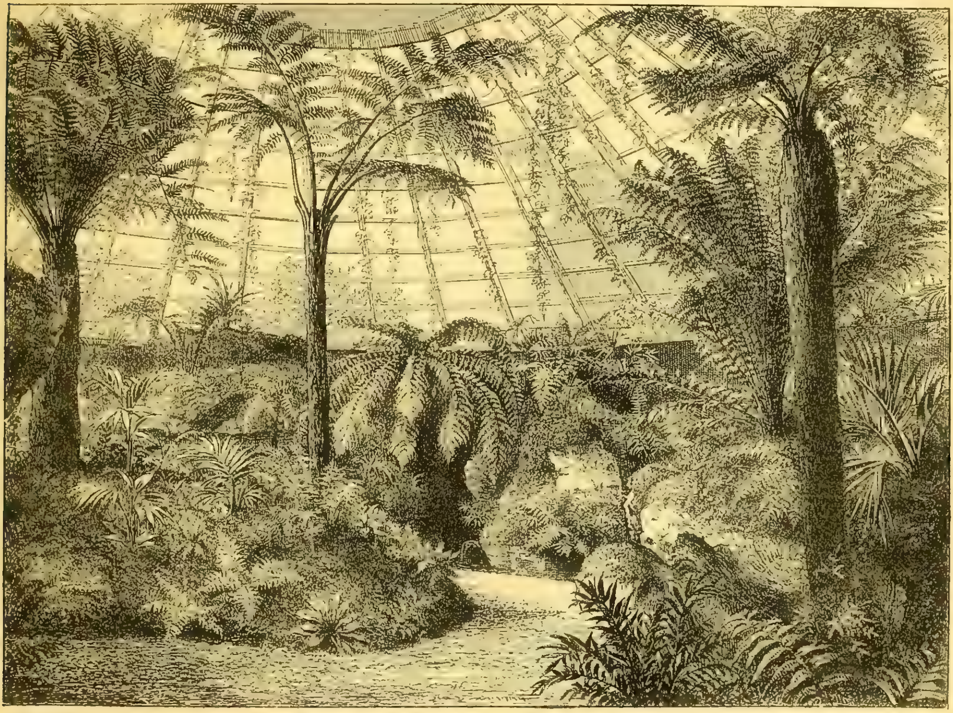
Pomological Literature.—As an instance of the imperfect character of our pomological literature, I may mention that I have searched in vain for Tom Put Apple in what is supposed to be the most authoritative Manual on varieties of fruits published in this country. It may be urged that the Apple is only of local fame, but, judging by recent correspondence in The Garden, this is hardly the case. I submit that one of the main aims of such a work as that to which I allude ought to be the enumeration of such useful varieties as this.—F. T. S.

The Golden Noble Apple.—I am surprised that this handsome Apple is not more grown for market purposes than it is. The tree is robust and a good cropper, the fruit is of a good medium size, with a singularly clean, smooth yellow skin, and in shape it is perfect. I should imagine that good samples of this Apple would be eagerly purchased by greengrocers for window dressing, as it affords a pleasing contrast to the dark-coloured kinds. It is always a valuable kitchen Apple, but just now it is equally acceptable for the dessert; its flesh is white, crisp, and juicy, and it has a pleasant but slightly acid taste.—D.

THE FLOWER GARDEN.

A FERNERY IN THE ISLE OF WIGHT.

The Fernery that has lately been made among the trees of St. John's House, the residence of Mr. J. P. Gassiot, is one of the most interesting which we know of. It consists of a sort of glass dome, which, at the highest point, is raised about 20 feet from the ground, while its circumference rests on jutting pieces of rock, or on a carpet of Heather, which flourishes around the spot. Its diameter is rather more than 40 feet. It is intersected by little paths, and has two main approaches—one upon the eastern and the other on the western side; they are so skilfully curved and cut out amidst sloping banks, as very greatly to add to the beauty of the place, and they seem to increase its size. In this Fernery some of the choicest Ferns and plants of New Zealand, Australia, and the temperate regions of India, China, and other countries are gathered together, and they seem to be as much at home as if they were in their native glens. Among the more prominent may be noticed Dicksonia squarrosa and antarctica, Pteris umbrosa, Todea africana, Cyathea Smithii and dealbata, Davallia polyantha, Osmunda capensis, cinnamomea, and spectabilis, Woodwardia orientalis, Davallia tenuifolia; and there is one gigantic Fern, which we believe is quite new in this country, and has not yet been named. It is about 16 feet high. Lilies, too, grow here, and Cyclamens from the Greek Isles are presently to be introduced into some of the multitudinous nooks and corners which abound within and without the Fernery, which, in time, when properly furnished, will be one of the most attractive of its kind. Here also many beautiful species of British Moss find a congenial home, such as Hookeria lucens, Leucobryum glaucum, and many others. It is not every one who can afford to experiment in this way with rare and costly plants and Ferns; but, should they do well under their present circumstances, the experiment will not be without profit to many gardeners in the more genial parts of the country. Several plants will probably have "half-hardy" associated with their names which have not yet enjoyed such a distinction, and, perchance, many charming little bits of scenery, with natural rocks and water, Ferns and wild flowers, will be covered in with glass. The trickling of running water and the presence of singing birds among the Ferns, are added to the other attractions of the Fernery, which was formed by Mr. A. Blake, of Fulham. R. W.



View in Fernery at St. John's House, Isle of Wight.

ANNUAL FLOWERS AND THEIR CULTIVATION.

Although the most popular kinds of annuals are employed in the flower garden, they are adapted for many uses to which they have as yet never been applied. There can be no doubt that the present expensive and sometimes monotonous and uninteresting style of garden decoration will soon give way to something better, in which annuals may play an important part. A few misconceptions prevail as to the relative merits of this class of plants; for example, by some they are regarded as "weedy" and "short-lived," their very cheapness, and the comparatively small amount of skill required in their cultivation, tending in some degree to their detriment in public estimation. These plants come into flower within a short period of time from the sowing of the seed, and a very large proportion of the best continue beautiful until the close of the season. Sometimes in the autumn Geraniums become "washed out," while Tom Thumb Tropæolum (or Dwarf Nastartium) may be ablaze with colour and continue so when the Geraniums are housed for the winter. A number of showy and long-lasting annuals may be selected for employment in the "bedding" system, and by a little management those that do not last the season out may be replaced by others for succession; they thus afford variety, and make no demand for glass and fuel to keep them through the winter. We have had great sheets of Candytufts, snow-white, rosy-red, and deep purple; when they began to wane they were removed, and the ground planted with Asters, and very soon there was another display, fresh and varied. Banks that would have swallowed many pounds' worth of greenhouse plants to cover them, have been made gay at a very trifling cost, by sowing upon them Tropæolums, Sweet Peas, Convolvuluses, Candytufts, Eschscholtzias, dwarf Poppies, and Clarkias: and damp half-shady borders have been delicately tesselated by means of Forget-me-nots, Venus's Looking Glass, Pansies, the rosy Oxalis, Nemophilas, and Scabious. For the more important positions in the flower garden we have choice of many handsome plants, such as Stocks, Asters, Balsams, Drummond's Phlox, Portulacas, Zinnias, Erysimums, Candytufts, the lovely Scarlet Flax, Silenes, Tropæolums (the true 'Tom Thumb' race offering a variety of colours), and many other plants equally beautiful and lasting. It should be remembered, too, that amongst annuals are found many richly-scented flowers; others, like the everlastings and the Grasses, are invaluable to dry for winter use, for employment in bouquets, and garlands in Christmas decorations; and some, such as the Sweet Peas for example, may be employed to cover arbours and trellises with fine effect, and may also be allowed to hang in festoons about the sunny parts of rockeries, or trail over the ground to make genuine bedding effects.

A number of plants of ornamental character, usually treated as perennials, are more effective, besides occasioning less labour to produce them, when cultivated as annuals. Several of the Campanulas are examples of this. The Indian Pink, again, and its several splendid varieties, do better as annuals than perennials. For ordinary purposes, blue Lobelias may be as well grown from seed as from cuttings. It may be observed that many annuals, reputed tender, and needing to be raised in heat, do very well indeed under more rough and ready treatment. In proof of this sow Perilla nankinensis in the first week of May where it is required, and in the month of July you will probably determine that Perilla does not greatly need the careful nursing it usually obtains in heated houses through the spring. Even the really tender Castor-oil Plant (Ricinus) will thrive if sown in the open ground the first week in May. Having no check, as plants put out from pots must have, the growth will be regular and sturdy, and they will attain great dimensions, and flower freely if the season is favourable. We recommend, not only a free use of annuals, where they can be appropriately employed for purposes of embellishment, but also the setting apart for a collection of them a border or plot, one part of which is sunny and another part partially shaded. On this border sow clumps of annuals, of as many kinds as possible, and affix to each clump a label that will last the season out, or enter the names in a book in the order in which the clumps are arranged, for purposes of ready reference. This border will afford much delight, for many annuals that are not "popular," because not particularly showy, will be found to be worthy of culture for their elegant forms and delicate blendings of colour.

Hardy Annuals.—These should be sown on a carefully-prepared surface, from which large stones and clods have been removed. Sow thinly, cover with a very thin coat of fine dry earth—the smallest seeds needing but a mere dusting to cover them—and, from the first, keep the plants thinned sufficiently to prevent over-crowding, which weakens them, and produces poor blooms. The soil into which they are transplanted for blooming should be deeply dug and well broken up; and if at all poor should be liberally manured. Spring-sown annuals are worthy of a better soil than they usually have allotted to them, as well as more careful treatment. It is not well to sow earlier than March, or later than the middle of April. The most important matter in the after culture is to keep the clumps well thinned; by early and bold practice in thinning, the plants will become so robust, and cover such large spaces of ground with their ample leafage and well-developed flowers, as to astonish people who may have ventured to designate them "fugacious and weedy." It is an excellent practice also to sow hardy annuals in September, and in this case choose a dry sheltered spot, from which they may be transplanted in March to where they are to flower.

Half-hardy Annuals.—Give these as long a period of growth as possible to ensure a vigorous plant before the season of flowering. We have had fine beds of Stocks by sowing in pans in March, and planting them out in a very small state. But beds from seed sown in a gentle heat in January were far superior; the only important exception to the rule of early sowing is the Aster. It is bad practice to sow Asters until the end of March, or even the middle of April; otherwise early sowing is a good rule. The soil for the seed pans should be rich and fine. Good loam, improved by the addition of thoroughly decayed manure and leaf mould, with sufficient sand to render the texture porous, will suit all kinds of annuals that are sown in pans under glass. Sow the seed thin, cover very slightly, and lay squares of glass over them to keep a uniform degree of moisture without the necessity of watering. Should watering become necessary, take care to avoid washing the seeds out. If the pans or pots containing the seeds are placed for an hour or two in a vessel containing two or three inches depth of water, they will absorb sufficient, and there will be no occasion to pour water on the surface. A gentle heat is to be preferred, as too rapid a germination of the seed tends to the production of weak plants. As soon as the young plants appear, remove the glasses and place the seed-pans in the fullest light, where air can be given without danger to them. A dry east wind blowing fiercely over them will prove a blast of death. If they have no air at all, they will be puny, rickety plants, scarcely worth planting out. Choice varieties should be carefully pricked out into pans and pots as soon as large enough; this will promote a stocky growth, and a free development of flowers. Take care not to plant out until the weather is favourable, for any great check will make starvelings of the nurslings. If you cannot command heat for half-hardy annuals, sow the first week in April, and shut up the pans in a frame facing the south, and the seeds will soon grow and do well. If that is too much trouble, sow in the open border early in May, making the border rich and friable, that they may have a good chance from the first.

Greenhouse Annuals.—These require the same general treatment as advised in the last section. But it is advisable to sow earlier, and in a stronger heat than is required for annuals that are to be planted out. It is also necessary to be in good time in pricking out the young plants, for if they get much drawn they cannot make good pot plants. A light, rich, perfectly sweet soil, containing a fair proportion of sharp sand, will alone ensure plants worth having. It is also important to get them into separate small pots as soon as possible, and to shift them on to larger and larger pots, until they have sufficient pot room for flowering; after which pot no more. As soon as these pots are filled with roots, give very weak manure-water constantly until the plants are in flower, and then discontinue it, watering it with pure soft water only. Many of the commonest annuals are worthy of careful culture for flowering early in the greenhouse, but we have in view just now such fine subjects as the Camellia-flowered Balsam, Globe Amarantus, Hibiscus, Ipomœa, Thunbergia, Pelargonium, &c. In illustration of the remarks made above, on treating many perennial plants as annuals, it may be worth observing here that if the seeds of the Zonal Pelargonium are sown in a heat of 60° to 70° in January or February (the earlier the better) the seedling plants will begin to bloom in the greenhouses in July, or nearly the whole will flower before November, thus affording an excellent display and the chances of a few novelties worth keeping. This mode of treating the plants saves the keeping of a number of plants through the winter. All those that are not regarded as better than the named varieties of their own colours may be destroyed as soon as autumn robs them of their beauty.

Biennials and Perennials.—These may be sown with success from June to August. A shady border, rather than under a burning wall, is preferable for the purpose. Use soil similar to that recommended for hardy annuals, and transplant as soon as strong enough into a sheltered spot, where they may remain during the winter. As early in March as the weather permits, transplant to where they are intended to bloom.

Asters.—It is only necessary here to say that they should have from the first a light, rich, porous soil. The middle of April is early enough to sow, and it is well to sow again at the end of April, and about the 9th of May, for a succession. If unusually fine plants are desired, prick out the seedlings as soon as large enough in a bed of rich soil, on a half-spent hot-bed, and by the time this is quite cooled down, the plants will be ready and may be lifted with good balls, and planted where they are to flower. The aphis has a great liking for the Aster, and fumigation may now and then be necessary. The best preventive is to keep the plants growing freely, with as much air and light as they will bear.

Stocks may be sown at almost any time—in fact, in every month of the year. For a grand bed and an early bloom, sow in February, on a gentle heat, and grow them on as recommended above for half-hardy annuals in general. A good bloom may be secured by sowing in a cool frame in March. Two things are important—first, a rich soil; and secondly, to plant out when the plants are very small—they should, in fact, make as much of their growth as possible where they are to bloom. Plant rather thickly at first, and as fast as they show bloom, remove the single ones, and remove double ones also where too crowded, as room must be allowed for them to branch freely. For early spring bloom in pots, sow in August and September. Bear in mind that Stocks are nearly hardy, and, therefore, should never be placed in a strong heat.

Chinese Primulas.—These charming plants may be brought to the highest perfection by the most simple means. It is a great point to give them a long period of growth before they flower, hence they should never be subjected to a forcing temperature, and, in fact, should be treated as nearly hardy, but should have ample protection against frost, damp, and cutting winds. In order to enjoy the bloom of these Primulas for a long period, make at least two sowings of seed, the first in March, and the second in May. Further sowings may be made, if required, in June and July. Sow on a rich fine soil, and cover with a mere dusting of fine earth, and every seed will germinate, but, if buried deeply, much will be lost.

Cinerarias.—These need nearly the same treatment as Primulas. Frost, damp, and greenfly are their principal enemies, but they are so nearly hardy that artificial heat must be afforded with great caution. Sow in April for plants to bloom in winter, and in July for a bloom in the later spring months. The July sowing will be the most valuable to those who have small gardens, as the flowering of the plants in the depth of winter makes a tax on greenhouse space, when it cannot be well spared. But Cinerarias produce such a brilliant display during the dark days of winter that accommodation should be found for them if possible.

Calceolarias.—May be treated as annuals, and by eliminating all the inferior plants as soon as they have flowered, a collection may be formed of original named varieties, from which valuable novelties may from time to time be selected. Sow the seed in July, in well drained pans. The seed should not be covered, but be put under a hand-glass, or in a close, shady corner of a frame. The seedling plants may be pricked out into a bed of turfy loam, in a frame for the winter, making no demand upon the greenhouse for their keeping; or they may all be potted and wintered in the house, in which case they will begin to flower in May.

Cockscombs.—Sow in rich light soil, in March or April, and plunge the pots in a smart hot-bed, or place them in a warm propagating house. It is impossible to grow fine Cockscombs by "cool treatment." The secret of producing large combs on small plants, with healthy leaves, consists in putting them on into larger and larger pots as they require it, each time putting them a little deeper in the soil, and maintaining a moist atmosphere with sufficient heat.

Pelargoniums of all kinds are most valuable, treated as annuals, as in their seedling state the plants are peculiarly robust and tree-like, and charmingly fresh in leafage and flowers. When grown from good seed a large proportion of fine varieties and a few real novelties may be expected. The seed may be sown on any day throughout the year, but the two best seasons are February and August. Sow in pans filled with a good mixture, in a somewhat rough state—if the surface nodules are as large as Horse Beans it will not be too rough. Cover with a sixteenth of an inch of fine soil. Put the seed-pans in a heat of 60° or 70° if sown in February, but heat will not be necessary at all unless it is desired to bring the plants into flower early in the ensuing summer. We have been accustomed to sow about the 10th of March, and place the seed-pans on a sunny shelf in a cool greenhouse, and have fine plants by the end of June.

Balsams.—These should never be sown too early, certainly not before the first week in April. The soil must be of a very porous nature, and to secure this use a good proportion of silver sand. As soon as the seed-leaves are fully expanded the plants should be transferred to well-drained pots, and should be inserted so deeply in the soil, that the leaves only appear just above the surface. Keep close for a few days, in a temperature not exceeding 65°. Afterwards give air as they begin to grow, and take care to keep the plants always close to the glass, otherwise they will become drawn. When well established they will require to be re-potted about once a fortnight, for the pot-bound condition is injurious to them.

Hollyhocks.—Sow in pans in January or February, and as soon as large enough, pot singly into thumb-pots. Re-pot the plants as they gain strength and size, and plant out into well-trenched and highly-manured borders about the middle of May, selecting showery weather if possible. They will then flower the same year, and thus save one year's growth. Or, if sown in August on a warm border, they may remain until April, when they should be planted where they are intended to flower.—"Sutton's Amateur's Guide."

Saxifraga Burseriana.—The flowers of this beautiful little Alpine are just beginning to make their appearance on the rock-work in the York Nurseries. They are of the purest white, while the bud is of a dull scarlet, borne on very short slender scarlet stems, which spring from miniature rosettes, composed of very small rigid greyish leaves. This species of Saxifrage thrives best when planted in a compost of loam and limestone, with a slight admixture of peat. Although in its native habitat, I found it thriving in a shady situation, with a northern aspect, at an altitude of about 6,000 feet; in this country it should be fully exposed to sun light, for, when grown in the shade, it loses its compact, rigid habit, in which its beauty resides.—R. P.

Do Christmas Roses Seed?—The seeding of Helleborus niger is not considered an unusual occurrence even in this part of England (South Lancashire). In some seasons it seeds abundantly in the gardens at Lathom House; and about two years ago the gardener (Mr. Kefford) saved upwards of half-an-ounce of seeds from his plants. I also saw it seeding profusely in a garden near Ormskirk, and seedlings in abundance sprang up round the plant. There is no doubt that seedlings of this plant, when brought to flower, would seed abundantly, as I believe there is a tendency in many plants to become sterile through long propagation in every way except by seed.—THOS. WILLIAMS, *Bath Lodge.*

Note From Caunton.—The Rev. S. Reynolds (now Canon) Hole, in writing to us on other matters, remarks:—"That sweet little Gentiana verna (it should be Gentiana hyemalis), in its determination to distinguish itself as President of the Alpine Club in our rock-garden has exhibited a bright azure star, which 'Twinkles to the wint'ry moon, and cheers the ungenial day.' We are very busy, now that a few impluvial and breezy days have dried our sodden soil, in transplanting the best lot of Rose trees I ever possessed. There rode by our boundary, the other morn, a youth in a crimson coat, and when he saw a large fellow-creature holding that which seemed to him as a dry stick in his hand, and gazing thereon with rapt admiration, he quickened his pace, as though he were nearer lunacy than he liked, and Caunton was Colney Hatch."

New Verbenas.—At Mr. J. Fraser's nursery, Lea Bridge Road, we noted, during the past summer, some Verbenas adapted for bedding; they were German varieties, and seem to have inherent vigour of constitution, such as our English varieties once had, but which many of them now lack—a fact which, perhaps, accounts for the neglect into which they have fallen. Some of the most distinct were:—Baron von Bookheim, bronzy-scarlet; Rudolph Brandt, purple, with white eye, somewhat recalling the fine old bedding plant of yore, Lantana Selloana; Moritz Schulz, deep claret, with small white eye; Baron von Apraxine, rich violet; Hofgarten Noak, rosy-pink, pale scarlet eye; Baronin von Paussinger, rose with crimson eye; Alemaine, deep rose-pink with white eye; Theodor Emmel, light vermilion, with white eye; Paul Vas, deep scarlet with dark eye; La Loire, maroon with white eye; and Gruss van Strassburg, orange-scarlet with large white eye. These may be recommended as well worth a trial.—"Florist."

Blue-flowered Hydrangeas in Cornwall.—In a place in Cornwall, where I was for some years, Hydrangeas grew very freely and attained a large size, in the shrubbery borders where the ground was not dug or otherwise disturbed. Of these bushes many were 4½ and 6 feet high, and as much through; they usually began to expand their bloom during the latter part of August, and, when the seasons were favourable the later opened flowers (those that expanded in September and October) would keep fresh and effective on to and after Christmas. In one portion of the ground the blooms were always blue, and, as strangers generally remarked, a pleasing light blue, such as is seldom seen in the case of any other plant. I frequently used these flowers for Christmas decoration, and associated with the red berries of the Holly and the greenest leaves at command they had a fine effect. On enquiry I learned that the plants which grew in that particular part of the ground had always produced blue flowers, while those in other parts of the ground always produced flowers of different shades, varying from blue to dull creamy or dirty white; on many occasions did visitors have cuttings from the blue flowering plants, but they did not produce flowers like those of the plants from which they were taken; the blue flowers are doubtless due to the presence of some particular ingredient in the soil. I ought to add that the plants which produced blue flowers grew under some very lofty trees, and, no doubt, the particular shade of blue, with which all were so pleased, was brought out all the better from the flowers not being exposed to the full glare of the mid-day sun.—G. DAWSON.

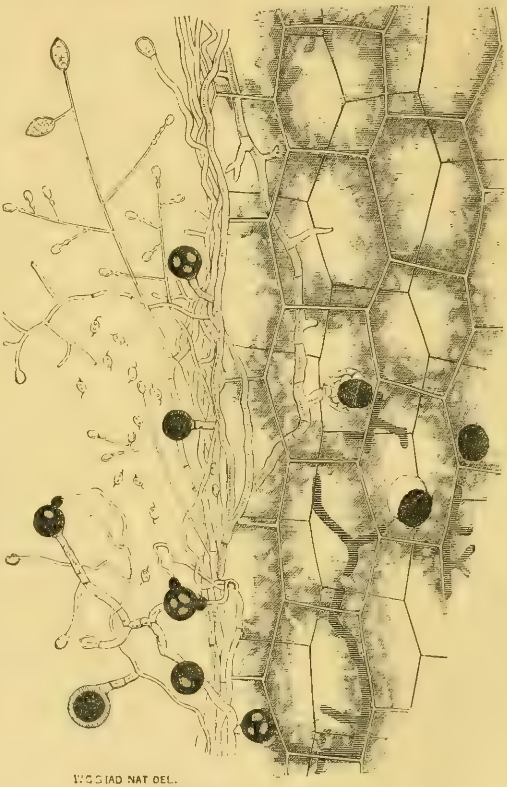
Hardiness of the White Lapageria.—At Gunnersbury Park a leading shoot of the white variety of Lapageria rosea, planted out in a low span-roofed house, has found its way outwards, and grows vigorously against the outside wall at the north end of the house. It passed the winter of 1874-5 unscathed, and during the past summer it grew with great vigour. I have not seen it lately, but have no doubt it is still flourishing. Does not this circumstance indicate that the Lapageria possesses greater hardiness of constitution than is generally ascribed to it?—R. D.

THE KITCHEN GARDEN.

ASPARAGUS CULTURE IN INDIA.

In a little pamphlet by Messrs. Barnes & Robinson on the culture of Asparagus in England, Ireland, and France, the different modes of growing that esculent are pointed out in such a manner as to be intelligible even to a fidgetty amateur gardener just commencing to take an interest in his newly acquired plot of land. But to make it more complete and useful, a note might perhaps be added to a third edition showing how the profitable cultivation of this desirable vegetable might be extended to India—say to Madras, Bangalore, and Mysore, where partial success has on several occasions been gained. The temperature at the former place is very high, so much so that it has been said that for three months, the climate is hot, but bearable in a large and well-appointed house, under a well-swung punkah, and, for the remaining nine, excessively hot and unbearable. Aided by an almost constant sea-breeze for some part of each day, Dr. Cornish succeeded in growing "Grass" of the giant kind, and not only in growing it, but in getting a cutting from the beds in seven months from the date of sowing the seed—a kind of forcing that even Frogmore may envy. I understood him to say that he got continued cuttings of fair-sized heads for some time afterwards, even during the hot weather, the details of which he communicated to the editor of the "Madras Mail," who published the account, of which I am sorry I have not a copy to send you. A similar trial was made at Bangalore by Colonel Pearse, who had a cutting in about the same time, from seed that Mr. Bull sent out. The plants were bedded out in Celery trenches, and under a liberal allowance of water and manure, and with a hot sun overhead, the growth was very luxuriant. But, in my judgment, sufficient room was not given for the root formation of each individual plant, and the early produce, though many of the heads were of fair size, was insipid — as immature food of every description generally is. This insipidity was, doubtless, due to the quickly forced growth. It would probably have been more in accordance with the dictates of Nature to have allowed the roots a longer period for healthy development, before any attempt was made to cut a dish of Asparagus from them; but, from an amateur point of view, it was something to be able to say that such had actually been done in little more than half a year, when, in England, it is generally considered that two and a half or three years must elapse before such a result can be obtained. Major Johnson also raised, at Mysore, very fair Asparagus under much difficulty. I have no note of the time it took him to mature his plants, but I think he would look more to solid results than to a sensationally early crop. It will be fair to predict that the constitution of the plants under sensational treatment would be quickly ruined. A professional gardener would not probably permit such a strain to be made upon them, and with good reason, as it appears to me. What is required is to understand thoroughly what the practical treatment in India should be, so that market gardeners there might be able to undertake the culture of this delicious vegetable on such a scale that the market shall be abundantly supplied, and their labour and outlay well repaid. It is on this point that practical information is eagerly sought, and I invoke your aid, and the aid of any interested readers of The Garden who may be willing and able to give it in your columns. From what has been already done, there seem to be reasonable grounds to believe that Asparagus culture may be profitably undertaken at Bangalore, and perhaps at Madras, and that in time the market may be supplied with fresh grown instead of canned "Grass." It would create a new industry for the market gardeners, who are very painstaking and intelligent, and who deserve every support that can be fairly given to them, and a plentiful supply of it would be a welcome addition to our vegetable food in a far-away land. I forgot to say that the growth at Madras and Bangalore was equally luxuriant, although the climatic conditions are so essentially different. The sea breeze at the former place was more congenial to the habit of the plant than the air of the inland elevated plateau of the Mysore Province, and made up in some way for the greater heat it had to endure on the coast. Perhaps the necessity of adding special saline manure in sufficient quantity was not thoroughly understood at Bangalore, and this is a point on which practical information is specially desired. From a comparison of the French and English systems, I would argue that at Bangalore the French plan would be most likely to succeed; but, instead of growing the Asparagus among the Vines, it might be grown in rows, between lines of the medium Castor-oil plant, or of Cajanus indicus (garden variety), either of which would give a grateful protection from sun and wind, and, at the same time, yield a fairly profitable extra crop. Mulching, in all its different forms, might also be added with excellent effect during hot weather.

J. P.



Rest-spores of the Potato Fungus.

REST-SPORES OF THE POTATO FUNGUS.

By W. CARRUTHERS.

The structure and life of the Peronospora infestans, as found on the foliage, haulm, and tubers of infested Potatoes, have long been well known, and have been frequently described; but the conditions under which the life of the parasite is continued from the autumn to the following summer have been the subject of frequent, persevering, but hitherto unsuccessful research. At the instigation of the Royal Agricultural Society, Professor De Bary has renewed his investigations in this direction, and has arrived at important, though yet unpublished, results. So obscure has this part of the life of the fungus been that some investigators have doubted whether the plant was a true Peronospora at all, and whether the desired information would not be discovered in some well-known fungus parasitic on a different group of plants from the Potato, and whose connection with the fungus of the Potato disease had not yet been suspected. The importance of Mr. Worthington Smith's discovery is all the greater that the subject was surrounded with so much obscurity. By the help of the engraving and of specimens that Mr. Smith has placed at my disposal, I am able to place before my readers the result of his addition to our knowledge. It was in investigating the new aspect which the disease had assumed in some, especially in some American, varieties of Potato that Mr. Smith discovered the rest-spores. With the view of separating the tissues for more exact examination, he placed in water some of the diseased leaves obtained from plants grown at Chiswick. He observed that the mycelium grew with greater rapidity in the water, and after ten days he found it producing a large number of minute spherical bodies of two kinds, the one considerably smaller than the other. He further observed specimens in which the already known fruits of Peronospora infestans were growing from the same mycelium as the newly-discovered bodies. One of these specimens is drawn in our illustration. There consequently remained with him no doubt as to the relation of the spherical bodies produced by the mycelium in the substance of the leaves to the Peronospora. These bodies exactly correspond with the sexual organs that De Bary had already described in several species of Peronospora under the name of oogonia for the larger, and antheridia for the smaller bodies. Mr. Smith perceived that he had discovered the sexual organs in this species of Peronospora, and continuing his observations he traced the relation between the two bodies. He observed the small antheridia attaching themselves to the oogonia and fertilising them, by discharging part of their contents into the larger cells through a small tube which was protruded into the substance of the oogonia. The growth of the fertilised oogonium, now called an oospore, was traced by him until it arrived at maturity, when it is a spherical body covered with warts or coarse reticulations and of a black-brown colour. It is but slightly larger than the cells of the leaf, being about one-thousandth of an inch in diameter. When the rest-spores are mature, they separate themselves from the mycelium on which they grew, and lie as free bodies in the substance of the Potato. And when, in course of time, the whole of the plant perishes, these small hardy bodies remain, able to endure through the winter, and ready to renew the life of the destructive fungus with the restored vegetable life of another year. Mr. Smith has found the rest-spores in the haulm and tuber as well as in the leaf. Having thus discovered the means by which the fungus maintains its life through the winter, we are able to look at the question of the possibility of doing something efficiently to mitigate if not destroy the evil. The malady which so extensively destroyed the silk-worms in the south of Europe some years ago, was unconsciously augmented by the producers throwing the dead worms together and keeping them within the establishment, thus increasing the conditions favourable to the growth of the fungus, and to the unlimited development of the spores. It was not until, by the advice of botanists, they cleared away from their silk-worm houses every dead insect and withered leaf, and cleaned the walls that they got any mastery over the disease. So we have been unconciously harbouring the Potato disease in permitting the haulm and foliage to decay on the field or in manure-heaps, which left the undecaying oospores behind ready to start into life when the proper conditions were present. Every care now should be taken to destroy, by burning, all diseased haulm; and as diseased tubers also harbour the rest-spores, these should be utilised in some way in which the spores could not be injurious, as by employing them in the manufacture of starch or British arrowroot. A vigorous and universal attempt thus to deal with the fungus might now greatly reduce the future liability to, and extent of, the disease, though it can never, I fear, deliver us entirely from it.—"Journal of the Royal Agricultural Society."

MR. CARRUTHERS' REPORT ON THE POTATO DISEASE.

If all who have cures to offer for the Potato disease were to study Mr. Carruthers' report on the subject (see p. 42) for the future, a vast amount of useless writing would be spared. Genuine enquirers after the truth, as regards this terrible pest, have hitherto had to encounter such masses of absurdities as to have nearly put them off the proper track. Mr. Carruthers' report, although all the conclusions at which he arrives are not new, must, let us hope, set aside all such obstacles. In the first place, all the essays have proved failures, and the writers of them will not have been made happier by the report in question. Secondly, of disease-proof kinds of Potato, we shall hardly hear much in future. Again, the notion that the disease is propagated by planting partially-diseased tubers is disposed of; and, still further, it has been most conclusively shown that change of seed offers no safeguard, for all of the 6 tons in question were grown elsewhere than where they were raised; a more complete change of soil could not be had. Moreover, the notion that soils of a certain character are more or less favourable to freedom from disease, apart from excess of moisture or other climatic causes, is shown to be baseless; as is also the belief that patent manures have any disease-resisting qualities; in fact, there is no point left untouched, and the whole question is now so narrowed that it will be sheer waste of time and space to go over any of the old ground again. To one fact Mr. Carruthers points with considerable emphasis; but it is, after all, one with which all are familiar, and that is, that the disease is more or less virulent in proportion to the amount of rainfall. Mr. Carruthers' inferences as to the existence of the living spores of the fungus in the air and their fertilisation on the leafage of the Potato by means of rainfall are identical with the views put forth by me in the "Daily News" some years ago, when I pointed out that the spores were floating about in the air, and only waiting for favourable conditions, namely, those of a humid atmosphere and a softened cellular tissue to settle, and become the instruments of vegetable destruction. A conclusive proof as to the agency of rain in promoting and feeding fungus growth is found in the fact that Potatoes grown under glass at the same time of the year, but fully exposed to the air at the sides and abundantly watered with pump water, remain healthy and vigorous; Mr. R. Fenn, of Woodstock, who was one of the first to demonstrate this fact, invariably grows his fine seedling crosses the first year under glass in order to ensure their safe maturity. In reference to a statement made in the report that where seventy bushels of soot per acre had been used the crops were almost free from disease, it should not be forgotten that our leading growers for exhibition invariably use a considerable quantity of both soot and lime for their Potato culture, both being conducive to cleanness of skin. Their heating and absorbent qualities have also been proved to be a considerable check to the growth of disease in the tubers. For healthy Potato culture, I know of no better conditions than good sound well-stored seed; soil moderately dry, deeply stirred, and well pulverised, that has been liberally manured for a previous crop; room between the sets in proportion to haulm growth, but rather too much than too little; and sharp ridging with the moulder when the haulm is sufficiently high, if under field culture—or with the fork, if planted in the garden. Add to this, if you will, a liberal dressing, just before planting, of a mixture composed of two parts screened wood-ashes, and one part each of slaked lime, soot, and guano, all of which will greatly assist in the production of clean tubers. Unless wanted for immediate use, or for marketing, it is sheer folly to lift the crop before it is ripe, in the hope of entirely saving it. The only result is the expenditure of a large amount of labour uselessly, as the Potatoes that would have rotted in the ground will decay all the same after storing. Our expectation that the disease may ultimately be checked is based on the hope that when its seat when at rest in the Potato is discovered, we may be able to attack it with greater advantage than when growth is active. What we want is an exact knowledge of the action of the disease under all circumstances; and when that shall have been ascertained, the victory will be nearly gained. Although the disease has been amongst us for more than thirty years, we are only just beginning to fairly grapple with it, and I trust that it may be to good purpose.

ALEX. DEAN.

Heeling-in Broccolies.—The heeling-in of Broccolies in winter is considered by some to be of little use. In my experience, however, which extends over many years, I have found great advantages from it, especially in the case of the early varieties, such as Snow's Winter White, Backhouse's Early, and the Penzance. These sorts are generally planted closer in the rows than other kinds, and are, therefore, drawn up; but, by heeling them down close to the ground, with their heads to the north, and putting a wisp of dry

Fern or hay in every head, they are preserved safe during the severest frosts. I never treat late sorts in this way, such as Cattell's Eclipse, Carter's Champion, and others, for they are grown sturdy in wide rows, and by earthing their stems well up, they generally stand severe frosts without injury.—Wiliam Tillery, *Welbeck.*

THE FRENCH EARLY HORN CARROT.

I should like to see this Carrot more extensively grown than it appears to be. I would especially recommend a trial of it to the owners of small gardens, as likely to give satisfaction both as regards its intrinsic qualities and its productive capabilities. I venture to assert that those who have habituated themselves to a supply of this root during the spring and summer months will not easily make up their minds to forego the luxury. Coming as it does at a season when fresh crisp vegetables are comparatively scarce, it seems to me to really merit that title. In all French kitchens this little Carrot is almost indispensable, and this is not to be wondered at for both its appearance and flavour are tempting, and fully justify the high estimation in which they are held. The first crop, where it is possible, should be sown on a moderate hot-bed in January, taking care that the soil employed is tolerably rich and well sweetened—the best material I have found for this purpose is the clearings of old hot-beds which have been turned over and over for several years, and have become reduced to the consistency of mould. Where a supply of this does not exist any kind of free well worked soil may be taken. When the seed is up thin out to about 4 inches, and care must afterwards be taken to admit plenty of air on all favourable occasions, so as to prevent drawing and covering up in cold weather. The first sowing in the open ground should be made about the middle of February, choosing a well sheltered and rather dry spot. Thoroughly break and pulverise the soil, which should be fairly rich; it is well to fork in a good dressing of soot and lime, which give substance to the tops and will free them in a great measure from the ravages of grubs. The seed may either be sown in a 4-feet bed or in drills; if the latter be preferred they should be drawn with a good broad hoe making them as wide as possible. It is advisable to sow the seed moderately thick to ensure a plant, thinning when up to about 4 inches. By leaving them thus they may be drawn as soon as the flavour is well defined. By thinning out methodically and regularly over the whole bed, in this manner a small piece of ground will yield a continuous and lengthened supply; in fact, it is surprising what a quantity can be grown on the space; by leaving them rather thick they can be pulled early, which forwards the season, and as the crop advances in size, so, from the constant thinning they acquire the room necessary to their development. It is, however, preferable not to depend upon one crop, and successional sowings should be made in the beginning and latter end of March, and again in April. The same rule that regulates the sowing of salads should be applied to them. Weeds should never be allowed to encroach upon them, and a good soaking of water in hot dry weather will greatly benefit them; in this manner a continuous supply of fresh young Carrots may be kept up during the whole of the season.

Byfleet. John Cornhill.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

To Keep Potatoes from Sprouting.—Where seed Potatoes cannot be spread out thinly, which is, of course, the best plan, it is astonishing what an influence simply turning them over has in checking premature growth, if it is only done in time. It is a ruinous practice to allow seed Potatoes to be stored in pits.—E. Hobday.

Iron Cinders or Clinkers for Garden Walks.—These form good foundations for garden walks or roads—a good depth of them in the bottom ensuring efficient drainage Thus treated the walks present a dry firm surface after the heaviest rain, and they are not only pleasant to walk on, but Moss and weeds seldom trouble them.—J. Groom.

The Shanghai Wheelbarrow.—Our garden wheelbarrow is, it appears, likely to be superseded by one of Chinese origin, introduced from Shanghai. The wheel is so arranged as to lighten the strain on the arms, and enable the load to be largely increased without increasing the labour. Can any of your readers say where I may see a specimen of this barrow, or send you a sketch of it for engraving?—J. H.

Pooley's Prolific Dwarf French Bean.—I grew this for the first time last summer, and can recommend it as one of the best for out-door cultivation. Its pods are long and slender in shape, and very productive and durable. Being of a fine green colour, it is better adapted for exhibition than any other with which I am acquainted; and the seeds, while green, are valuable as Haricots. —W. C.

Laxton's Standard Pea.—This Pea is not of yesterday's acquaintance; on the contrary, I have grown it both late and early for three years. Sown thinly, and stuck with good 3 feet stakes, in good rich soil, it quite covers its supports, and is literally loaded with Peas from bottom to top. The average number in one pod is nine, but many have eleven, and of the very best flavour. Being dwarf, it takes up but little room; and although great numbers of Peas are before the public, this standard Pea is the one for the cottager, or for others who have small gardens.—R. Gilbert, *Burghley.*

KENSINGTON GARDENS AND LONDON TREES.

An "Indian Forester," writing the other day to the "Times," in reference to Hyde Park and Kensington Gardens, says:—"It needs only a moderately intelligent examination of the wooded portions of Kensington Gardens, to notice that a large majority of the best trees are rapidly dying. The evil is not equally apparent in all parts, but in places it stares one in the face. If we take, for instance, the trees between the Albert Memorial and Kensington Palace, it is not too much to say that above 80 per cent. are diseased or dying. One remedy, indeed, seems to have been tried as a sort of panacea, and that is lopping and cutting off the tops of the trees. Besides producing, in many instances, the most hideous stumps, it is by no means certain, not even very probable, that this remedy is effectual, the spurt which the tree puts on in sending out shoots near the cut being purely temporary, and likely to be soon exhausted. Great numbers of the trees now standing ought to be removed, or they will become absolutely worthless, and I would urge the formation of a small committee of practical and experienced foresters, including some experts in landscape gardening to look into the matter. The requisites for a remedy are, to avoid rash and empirical conclusions as to causes, and to substitute accurate and recorded *data* and observation of fact."

Mr. C. D. Hudson, of 51, South Audley Street, states that the "Times'" correspondent just quoted has omitted to mention one fertile cause of the premature decay of these trees, which is the fact (and there is unmistakable evidence to prove this) of their having been greatly overcrowded during the earlier stages of their growth as well as subsequently. That this has borne an important part in shortening their lives is apparent by an examination of those trees which stand out singly, not only in Kensington Gardens, but in Hyde Park, the Green Park, and other places in London, where very fair samples of trees of equal age with those in Kensington Gardens may still be seen in a tolerably healthy condition. The longest lived and healthiest trees are invariably to be found among those which have sufficient room both for their roots and branches. But what we have now to consider is the description of tree to be used in re-planting. There is only one tree which really flourishes in London, and that is the Oriental Plane. If anyone wishes to prove this, let him make a tour round our squares and parks. Let him examine the Planes planted in Hyde Park, the few to be found here and there in Kensington Gardens, and in the Green Park along the side of Piccadilly, where there is a continuous row of alternate Planes and Elms. He will find that everywhere alike this tree is outstripping its older rivals. Finally, let him look at the magnificent specimens in Berkeley Square. In fact, these trees are hardy, of rapid growth, and attain first-class dimensions, and what is of the greatest importance, are not affected, owing to the annual shedding of their outer bark, by a smoky atmosphere. I would not banish every other description of tree from our parks; other kinds might be sparingly used. For instance, the White Birch, with its beautiful bark and graceful sprays, might with great advantage be introduced on the fringes of the new plantations; but unless the great mass of the new trees planted consist of the Plane, our efforts for the restoration of the Kensington Gardens' forest will most surely end in disappointment.

In reference to these statements "W. R." remarks:—Kensington Gardens are certainly in a bad state, but they cannot, I fear, be made better by the roundabout and tortuous methods proposed by "An Indian Forester." It is no more necessary to take all his precautions than it would be to institute similar ones to secure the good management of a ship. In each case what we want is a good man who knows his business. Planting in most of our parks is sadly neglected—at least, in all its nobler aspects, while great expense and skill are lavished on myriads of plants that live for the summer only, in those long and often stiff-looking masses that stretch along by Piccadilly and elsewhere during the summer. The true remedy for the present state of things is the annual planting of a certain portion of ground in each great park, beginning naturally with the worse parts. That portion should be thoroughly cleared, prepared, and planted. We should thus secure perpetual growth and vigour, as well as stately beauty, in our park trees. Stealing out a dying tree here and there, and stealing in a young one—often done in London parks—is a great mistake. To clear a portion of the ground and plant annually a group or family thoroughly well is the only satisfactory way. Frequently there are open bare spaces left unplanted for years, as, for example, Primrose Hill, which is as bare as a great inverted basin. There is much that might be said on this matter, but I hesitate to intrude on your space.

[Mr. Hudson's statement that "there is only one tree which really flourishes in London, and that is the Plane," is contrary to fact, and may, if acted upon, lead to great harm. No doubt the Plane is one of our noblest trees, and, for certain positions in towns, on the whole the best; but many others thrive perfectly in London, and London Parks with one fine tree would be too like a world with only one type of beautiful face. "Only one tree that really flourishes in London!" Mr. Hudson cannot surely have seen those beautiful and healthy old Hawthorns, in Kensington Gardens, that last May swarmed with rosy buds and blossoms, as fresh as ever grew in the open country. Why, anyone who strolls through Kensington Gardens on a late spring or early summer morning may see a whole arboretum of trees in the most perfect health. The best living collection of the various kinds of Ash trees, American or European, that I know of, is in Kensington Gardens, and all in perfect health. There are Horse Chestnuts, which were towers of silvery spikes last summer, Maples in variety, Almonds and double Peaches that make the shrubberies sparkle with warm hues in spring; double Cherries with soft snowy blossoms, and Laburnums with golden rain. All the Maples tried are quite at home, and so are many other deciduous trees, such as the Locust and Honey Locust trees; as stately as the Planes, and more picturesque in habit are the great Poplars particularly fine at the lower end of the Serpentine, and also in the Green Park, near Piccadilly. If it were desirable, it would be easy to enumerate a host of beautiful trees that thrive in these gardens. The fact is there is no deciduous tree that inhabits the northern regions of the earth which may not be grown in London if properly planted and placed in a suitable position. Evergreens, with few exceptions, perish from the action of the London smoke in the long winter and spring months—an evil which all the trees that shed their leaves in autumn escape. The evils that affect the trees in Kensington Gardens—old age, injury from overcrowding or from exhaustion of the ground, or from the trees being in unsuitable positions—are such as would work like results everywhere else. The great want, however, is the regular annual planting of a certain portion. The old trees in Kensington Gardens, like the old men and women mentioned in the obituary of the "Times," die at last, and if we fail to raise an annual crop, decay soon begins to be disagreeably conspicuous. Even the difficulties of planting in the very heart of London are exaggerated. In Printing-house Square, under the very windows of the "Times" office, are trees of the American shrubby Trefoil (Ptelea trifoliata) as healthy and as large as we have ever seen them in any collection in this country. Look at the beautiful Weeping Ash trees in Brunswick Square and elsewhere in West-central London, and the excellent Catalpas seen here and there (in the Marylebone Road, for instance), that are covered with handsome blossoms and large shade-giving leaves. Look, also, at the Hawthorns and other trees of the Rosaceous Order in the Botanic Gardens, Regent's Park, where the soil is very cold and stiff, at the Sumach, Pyruses, Medlars, snowy Mespilus, Bird Cherry, Tulip tree, Sir Charles Wager's Maple, Flowering Ash, and many other trees, which anyone who cares about trees may see thriving in London. There is, indeed, ample proof under our eyes that not one, but hundreds of different kinds of trees may be grown in perfection in our London parks. Nothing would be more fatal to the beauty of these than exclusive adoption of one or even several kinds of trees. Let us have plenty of Planes, by all means; but also let us enhance this stately tree by contrasting it with the splendid wealth of tree-form and blossom now introduced to our gardens. Let one-fifth of the means and skill now devoted to the building of glass-houses and the culture of tender plants in London parks be diverted to the systematic and judicious planting of hardy trees; and, in due time, the parks of London will become the finest Arboretum of deciduous trees in the world, for there is no city where they thrive better, no city with anything like the same grand opportunities for planting.—W. R.]

Coleworts, Peas, and other Market Garden Grops.—I am not surprised to hear that Mr. Gilbert grows a large amount of Coleworts, knowing the opportunities which he has of doing so, and how he realises their value; but my remarks applied rather to the great mass of gardens in the country than to kitchen gardens like that at Burghley, where no useful vegetable is neglected. Mr. Gilbert, however, does surprise me when he writes that, as a rule, "market gardeners do not grow Peas." Probably market fruit growers, like Messrs. Dancer and Wilmot, and even Steel, do not do so; because, with them, vegetables constitute accessories rather than staple crops; but, in my own immediate locality, matters are different, inasmuch as here, in the majority of cases, vegetables are much more extensively grown than fruit, and Peas, especially, are grown upon hundreds of acres, constituting, not farm, but market garden crops. At the height of the last Pea season one of my neighbours sent up to market daily 1,000 bushels, whilst smaller growers also furnished immense quantities. Already, where Coleworts have been cleared off the ground is being manured and prepared for early Peas and Potatoes, and these will be succeeded by Broccoli, Coleworts, &c., and so on from year to year, the chance of a crop being made to depend more on high cultivation than on rotation. Peas, Potatoes, and winter Greens are the great staple crops in this locality. Of course, however, many other kinds of vegetables are grown, but not so extensively.—Alex. Dean, *Bedfont, Hounslow.*

NEW PLANTS, &c.

Crassula Bolusii.—A small-tufted south African species, bearing little clusters of pale lilac flowers. The oblong-lanceolate fleshy leaves are curiously spotted with dark green and are fringed with short hairs. It grows and flowers freely, but is not showy. "Botanical Magazine," t. 6,194.

Rubus Roezli.—A smooth-branched shrub, with palmate-lobed leaves and creamy-white flowers the size of half-a-crown. It was discovered in Colorado by M. Roezl. "Gartenflora," t. 837, pl. 2.

Staphylea colchica.—A hardy shrub from the Caucasus, nearly allied to S. pinnata, having ternate bright green leaves and racemes of delicate white flowers of wax-like texture, the four petals forming a tube around the stamens. Grown in pots it is valuable for forcing, by which operation the flowers acquire a peculiarly delicate frosted appearance. "Gartenflora," t. 837, pl. 1.

Pescatorea cerina.—A showy white-flowered Orchid, having plicate bright green leaves and large wax-like white flowers, the column being of a deep crimson colour, and the yellow lip has a series of erect purplish-brown plates at its base. South America. "Gartenflora," t. 838.

Thibaudia Hendersoni.—A branching shrub, having alternate, ovate three or four-nerved leaves, and terminal clusters of rosy tubular flowers, each about three-quarters of an inch in length, the mouth of the tube being tipped with yellow. "Garten Zeitung," t. 840, pl. 2.

Fritillaria aurea.—A pretty little bulbous plant, about 5 inches in height, bearing a stem of four to six thick fleshy deep-green leaves, and a solitary nodding flower; the flower is pale-yellow in colour, spotted, or chequered with brown. It is a native of Silesia, and perfectly hardy. "Gartenflora," t. 840, pl. 1.

Ranunculus amplexicaulis.—A pretty white-flowered Crowfoot, a native of the European Alps, and well worth culture. The nerved glaucous leaves clasp the stem, like those of a Rodanthe, and the flowers are borne in terminal clusters, each being about the size of half-a-crown, pure white in colour, with a yellow tuft of stamens in the centre. It is sometimes grown as a pot-plant for spring flowering. "Gartenflora," t. 841, pl. 1.

Calochortus glaucus.—A very pretty little Californian bulbous plant, introduced by Mr. Elwes; it has a solitary, narrow lance-shaped leaf, and bears two or three flowers on a scape; the flowers are white, having a rosy blotch at the base of each hairy segment. "Gartenflora," t. 841, pl. 1.

Proteinophallus Rivieri.—This is the plant now well known to cultivators as Amorphophallus Rivieri, and is the hardiest in the group to which it belongs, and the only one which is valuable as an outdoor decorative plant. It was introduced to French gardens some years ago by M. Rivière, of the Luxemburg, and is a very effective decorative plant. We have seen it offered for sale as a pot plant in Covent Garden for the last two years. Like its allies, it throws up an umbrella-like head of deep green foliage, borne on a cylindrical stem, 2 to 3 feet in height. The spathe is 4 or 5 inches across, and of a livid purple colour, spotted with green below, the spadix being purple, streaked with white. It is well worth culture, either for indoor decorative purposes, or in the sub-tropical garden. It is figured in the "Botanical Magazine," t. 6,195.

Ferula (Euryangium) Sumbul.—A valuable but fœtid drug-producing plant, introduced to Kew from the Imperial Garden at Moscow in 1872, one of which bloomed in July last. It is a native of Turkestan, where it inhabits the mountains to the east of Samarkand, at an elevation of from 3,000 to 4,000 feet, where it was discovered by Fedschenko in 1869. According to Flückiger and Hanbury's admirable work, the Sumbul plant is remarkable for the fœtid, musky, and milky juice of its roots; it was introduced into Russia in 1835 as a substitute for Musk and as a remedy for cholera, thence it reached Germany in 1840, and England in 1850, where it was admitted into the Pharmacopœia in 1867. The root is imported in transverse slices, 1 to 5 inches in diameter, with a dry papery bark, resinous inner surface, and spongy farinaceous central portion, which has a musky odour and bitter aromatic taste. The plant closely resembles a Ferula in habit, and throws up a branched flower-stem, 8 or 10 feet in height. It belongs to the Umbellifers, and its yellowish flowers were fertilised by bees, but, owing to the wet cold summer, the fruit did not ripen at Kew. "Botanical Magazine," t. 6,196.

PICEA PARSONSIANA.

SOME doubts having been expressed in the American "Gardeners' Monthly" as to whether or not this is a variety of P. grandis, Mr. Parsons writes to that periodical as follows :—The seed from which this Picea was grown was received without name from California in the spring of 1853. In the autumn of 1855, Mr. Stuart Low, then in America, bought all the young plants which we were willing to spare. A plant was also sent to Kew Gardens and to Mr. Barron, at Elvaston. Some years after our plant was introduced, seed was received in England, the trees from which I saw, in the spring of 1859, in the grounds of Messrs. Waterer & Godfrey, at Knaphill. These I recognised at once as our Picea, although it was called lasiocarpa. We then wrote to Mr. Barron, who told us that the true lasiocarpa was totally different from the plants of Messrs. Waterer & Godfrey, that their plants were wrongly named, that our Picea was undoubtedly a new species unlike anything known in England in 1855, and that he should adhere to his nomenclature given at that time, which was Picea Parsonsiana. On examining our own plants, as well as those of Messrs. Waterer & Godfrey, we found that the species sported very much, and produced trees widely differing, but having a predominance of straight leaves. Finding among our own stock a variety which we did not find in England, with curling leaves, symmetrical form, and a remarkable Fern-like aspect, we decided to propagate that only, and let the straight-leaved plants go. This curled form can be perpetuated only by grafting. From seed it sports as much as the Norway Spruce, and the curled variety cannot be so obtained with certainty. This variety having been cultivated as lasiocarpa by Messrs. Waterer & Godfrey, was distributed by them under that name. Mr. Bolander, formerly botanist of the California State Survey, on a recent visit to our grounds, examined our plants, and stated that they were all grandis, that the straight or flat leaf was the coast form, and the curled leaved variety, or our P. Parsonsiana, was the mountain form. Mr. Fowler, of Castle Kennedy, says that P. Lowii, which he makes a synonym of Parsonsiana and lasiocarpa, was discovered by Mr. Wm. Lobb in California, and that seed of it was sent home in 1860. If, therefore, Lowii and Parsonsiana are identical, and if our plants were sent to Mr. Low in 1855, and this seed from California came in 1860, it is clear that we are entitled to the name, however unwilling we may be to interfere with the rights of Mr. Low, for whose personal character and enterprise we have the highest respect. Be that as it may, the tree remains, and no description can do justice to its beauty. It is worthy of admiration at all seasons; but, in June—when the new growth overspreads the old, when the delicate light steel-green of the new shoot is contrasted with the rich darkness of the old, and the leaves curl up over the branches till they almost meet—it is especially beautiful. My finest specimen, near my house, succumbed to the frosty weather of 1872. Lovers of trees would sit upon my piazza and, fascinated by its charms, gaze upon it as a connoisseur would upon a beautiful picture. Of all the disasters of that disastrous spring, none were more felt than the loss of this charming specimen.

Caution to Petroleum Consumers.—The recent deplorable loss of life and property by the burning of the Goliath should serve us a caution to all who use petroleum, in any of its many aliases of molucca oil, crystal oil, Alexandra oil, &c., not to burn it in metal containers. The evidence given at the inquest shows indisputably (coinciding with the result of our own experiments), that if the oil in the lamp when upset had not been raised considerably above 100°, Fah., it would not have taken fire from the flame of the wick. Now in a glass or earthenware container—both of which materials are bad conductors of heat—no such rise can occur, it being extremely difficult, and especially during the winter season, to raise the oil in it above 60° or 65°, at which temperature it cannot be made to take fire, either in bulk or when spread on a flat, boarded or tiled floor. But in the metal container used in the Goliath, when nearly empty (as it must have been after burning all night), not only is the oil easily raised to a high temperature, but a quantity of inflammable vapour is given off, which is far more dangerous than the oil itself We have not the slightest doubt, from our own numerous experiments with petroleum in various lamps, that when used in glass or earthern containers with ordinary care, there is not the slightest danger of combustion beyond that required for illuminating purposes; but in numerous cases in which we have burned it in lamps without the intervention of a non-conductor between the flame and the container, vapour has been given off so abundantly as to take fire around the joint, whereas this accident has never occurred with the glass containers which we have constantly used during the last two and a half years, both with Hinks's Duplex and the Paragon burners. We have, therefore, no hesitation in cautioning our readers against the use of metal for the purpose of holding petroleum in lamps, and still more in stoves; while, on the other hand, we can assure them as to the safety of glass when employed in lieu of metal. We do not know whether in the Goliath lamps the layer of cork generally employed by Mr. Hinks as a non-conductor was introduced; but, though this to a certain extent acts as a non-conductor, the layer is too thin to be a complete safeguard, according to our experience.—"Field."

Waterton's Filbert Tree.—Walton Hall had at one time its own Corn mill, and when that inconvenient necessity no longer existed the millstone was laid by in an orchard and forgotten. The diameter of this circular stone measured 5½ feet, while its depth averaged 7 inches throughout; its central opening had a diameter of 11 inches. Some bird or squirrel had dropped the fruit of a Filbert tree through this hole on to the earth, and in 1812 the seedling was seen rising up through the opening. As its trunk gradually grew through this aperture and increased, its power to raise the ponderous mass of stone was speculated upon by many. Would the Filbert tree die in the attempt? Would it burst the millstone? Or would it lift it? In the end the little Filbert tree lifted the millstone, and in 1863 wore it like a crinoline about its trunk, and Mr. Waterton used to sit upon it under the branches. For a representation of this stone and tree see p. 227, Vol. II.

Plants known to be Carniverous Half a Century ago.—Within the past three or four years the subject of carnivorous plants has received a considerable amount of attention from men of science and others. It has been asserted that certain plants, such, for example, as the Sundew (Drosera rotundifolia), capture, dissolve, digest, and absorb flies and insects which are placed upon or happen to touch specified portions of them. The insects and flies are, it is stated, devoured in this manner for the purpose of supplying the plants with food. The attention, says a correspondent of the "Times," which this subject has excited, and the surprise expressed by many persons, led several to suppose that the utilisation of insects as food by Drosera was a new discovery. That it is not so, however, the following passage from "Coombe's Constitution of Man," printed in 1835, will show, Sec. 5, No. 6 :—"Destructiveness is given, and man is constituted with a carnivorous stomach, and animals to be killed and eaten, exist. . . . . Not only has Nature taught the spider to construct a web for the purpose of ensnaring flies, that it may devour them, and constituted beasts of prey with carnivorous teeth, but she has formed even plants, such as Drosera, to catch and kill flies and use them for food." Coombe probably copied from another writer, so in all probability the vagaries of carniverous plants were known half a century ago, instead of the other day, as one would suppose, had he nothing else to judge from but the sudden demand for Sundew by hundreds of persons who desire to gratify a cruel curiosity in observing the wriggling agonies of an ant or fly placed upon its leaves.

NOTES AND QUESTIONS—VARIOUS.

Cork Tree Acorns.—Mr. John Jay Smith, of Germanstown, Philadelphia, U.S., writes to us stating that he wishes to make some experimental planting of the Cork Oak in the United States, and would be glad if any correspondent of THE GARDEN would inform him where he may obtain good seeds of it.

The Northern Spy as a Keeping Apple.—We hear a very good account of this fine Apple as a keeper in its native country, and of good specimens of it being eaten as late as the 19th of July. It would not be true to say that they were as good as they would have been three or four months earlier, but they were the best Apple that we ever ate so late in the season. They were not withered and partly dried up, as is the case with Russets preserved till summer, but were fresh, crisp, juicy, and aromatic—real Apples, and not apologies for them.

The Jasminum nudiflorum against Light-coloured Walls.—At this time of year I am often compelled to admire the beauty of this naked-flowered Jasmine. The illustration of it (see p. 41) admirably depicts its floriferousness through the otherwise comparatively flowerless month of January. Cultivators should, however, discontinue planting it against walls or houses built of ordinary white or straw-coloured bricks, which are ill calculated to show off its bright yellow flowers to advantage. Red brick or any dark ground colour is best. This Jasmine ought to be found everywhere where hardy creepers are grown.—A. D.

Variegated Thyme Best for all Purposes.—It is a singular fact that the golden variegated form of the common Lemon Thyme is more robust than the green-leaved kind, a circumstance somewhat unusual in the case of variegated plants. Apart from the beautiful character of the leafage of this Thyme, however, which renders it so attractive during spring and summer, it has the special merit of retaining its foliage all through the winter, and, in this respect, is much more useful for decorative purposes than the common variety. Indeed, looking at the beauty of its foliage and perennial character of the leaves of the Golden Thyme, it seems difficult to understand why the common kind should be grown at all.—D.

Abies Albertiana.—This is the Californian type of Abies canadensis or Hemlock Spruce, but it is greatly superior to the latter, being a more robust and rapid grower. It also retains the graceful drooping habit of the Hemlock Spruce, without that over-inclination to form a bush which the latter possesses. Its foliage, too, is a true dark green, quite a contrast, in this respect, to the mealy indistinct green of the Hemlock. I have a number of plants of both kinds growing side by side in the nursery here, where the contrast between the two is strikingly apparent. I have no doubt that Abies Albertiana will prove to be one of our best drooping Conifers, as well as one of the largest and most ornamental of timber trees.—G. B., *Longleat.*

No. 218.] SATURDAY, JAN. 22, 1876. [Vol. IX.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

NEW ROOTS AND OLD VINES.

No fruit tree bears root-pruning better than the Vine, nor is there any fruit-bearing tree which better, or more quickly or generously, repays any attention that may be given it in the way of an improved border to feed in, or periodical top-dressings. If the roots wander too far afield, or if they get into an unwholesome or hungry sub-soil, they may be cut back without any hesitation, and brought near the surface in fresh soil, and will not suffer for it very perceptibly as regards the crop, provided an average amount of care is exercised in the work. This has been stated over and over again; but still there are some who hesitate to adopt strong radical measures with unproductive or retrograding Vines, from fear of disaster. Two years ago, a failing Vine, whose stem was introduced to the inside of a Vinery underneath a brick passage, about 6 feet wide, through a narrow brick drain, had to be lifted and re-planted. The roots were in an outside border, as usual, but on examining them, or it—there was but one—it was found to have struck deep down into the sub-soil. In the few feet of brick drain, however, it was found that a quantity of fibrous roots had pushed from the stem. The Vine was lifted, the drain roots preserved, but the thick root already alluded to was chopped off close to the end of the drain, and a curious old stump of a Vine plant it then was. It was re-planted, however, with the stem roots disentangled, in a border of good soil, and the result was a really fine crop of Grapes the same season. The Vines in a Muscat-house here, which were probably over fifty years old, were entirely lifted and re-planted in 1874, and, I am glad to say, without the loss of a crop. Indeed, the Grapes produced during the experiment were probably the best that the Vines had ripened for many years before. It became evident, as the work proceeded, that the roots of the Vines in question had not been disturbed since the day when they were first planted. They had wandered beyond the borders, and no fibrous roots could be found—only long black, brittle sticks, of the same thickness throughout, some of them down into the hard gravelly clay which formed the sub-soil of the border. They had been planted inside, and the roots were at liberty to pass through arches into the outside border. It was, therefore, determined in the spring of that year to excavate the whole of the inside border; and refill it with fresh soil, saving all the roots possible. It was soon found that there were not many to save, and that the few that were left were in a state of decay. The border, it could be seen, however, had at one time been full of roots. It was a matter of extreme difficulty to preserve the roots which still remained; the soil was picked clean out of the arches until the old stems were quite undermined. The roots were cleaned, half the width of border was filled up, and the old roots were spread out as the soil was being wheeled in. As the buds began to burst into leaf in March, the half of the border left empty was filled up with leaves and litter mixed, which warmed the new border, and before midsummer fresh roots were laying hold of the soil in abundance, especially round the base of the old stems, where previously not a vestige of small root was to be seen; now the fresh soil promoted the growth of a whorl of strong roots, which ramified into the fresh turf in all directions. The following autumn it was resolved to excavate the whole of the outside border in the same way, while the crop of Grapes was hanging not yet ripe, and the foliage still green. The outside border was about 60 feet long and 16 feet wide; operations were commenced at one end by taking out a trench down to the sub-soil, for no drainage was found, none being necessary in this particular position. Two men, with forks, then proceeded cautiously to pick away the soil and disinter the roots, a work of much difficulty, owing to their being so brittle and twisted every few inches; as with the inside border, no fibrous roots were found within the width of the border; the feeding roots were far beyond, underneath a gravel walk, and many of the roots were down in the dry clay below, into which no trouble was taken to follow them; on the contrary, they were cut off; such as were lifted were laid back along the front of the wall, and covered over with straw as the work proceeded; ultimately they were all shortened back to a length, equal to half the width of the border, more or less. The bottom of the border was finally levelled, a drain laid along the front, and 6 inches of burnt clay, from an old brick kiln, laid on by way of making a more healthy bed for the soil. A new border, 8 feet wide, was made of yellow loam, some fibrous peat, bones, and rotten horse manure, the roots being laid out carefully, as the soil was being wheeled in. About the first week in March, when the Vines had begun to show green leaves, the open half of the border outside was filled up with leaves, which threw a gentle mild heat into the newly-made border. It should be mentioned that the extremities of several of the old roots were marked by inserting sticks in the border, and on examination about midsummer these extremities were found to be each furnished with a tuft of young healthy roots ramifying into the new soil. Some anxiety was felt as to how the Vines would behave at the setting period; they were subjected to somewhat cool temperatures at night, and not pushed during the daytime; they were abundantly syringed, and the inside border watered at intervals, the result being that they set their fruit as well as in former years. After the first flush of growth they seemed to stand still for a few weeks, but ultimately started with renewed vigour; the fruit swelled up well and ripened to a fine yellow colour, and kept in good condition until Christmas. The foliage throughout the season never attained a large size; but the wood became strong and ripened to a fine clear straw colour. Several young rods, which were encouraged after the second growth started, soon reached the top of the rafters. There is now the satisfaction of knowing that the borders, outside and in, are full of young feeding roots quite under control, and that the Vines have the benefit of whatever mulching or watering the borders may get. A greatly improved crop is expected during the coming season from these old Vines, which are as stout as one's ankle from the soil to the glass, before branching, which each of them does, into three or four rods. No one, therefore, need fear to lift the roots of Vines entirely, however old they may be; and old Vines should never be discarded without much consideration. W. D. C.

NEW CHRISTMAS ROSES.

Having been asked sundry questions as to the propagation of Helleborus maximus or major, I venture to answer them through your columns. Mr. M'Nab informed me that pieces of root would not succeed in heat; therefore I have never adopted that plan. Having been informed that large numbers had been lost by being propagated late in the autumn, I took warning, and have always kept to the season which has proved so entirely successful. There is no danger in dividing Christmas Roses in the ordinary way at any season, when the weather and soil are suitable; but cutting up the rhizomes is quite another matter. Possibly a year might be gained by doing this in spring, when there would be no fear of the pieces rotting, as they do in autumn; but would the eyes be as strong then as in July? The common Christmas Rose (H. niger) has no root-stock worth working with; the largest clump of it can be broken up by the hand, and when well shaken will crumble into plants, so to speak, every two or three leaves having true roots attached to them. This is not, however, the case with Helleborus maximus, which has not a shallow-spreading root-stock like that of H. niger, but one which gets hard and goes deep and requires a spade to cut it. No one can break up an old-established clump of this kind by means of his hands alone, and its unwieldy roots dislike confinement in pots. It is to be regretted that your correspondent, "Berks," did not allow his seedlings of H. niger to flower. More than once I have been taken in triumph to a patch of "seedlings," which, on examination, proved, to the owner's mortification, to be only the produce of small, starved portions of root, that had been left when the parent plant had been removed. Mr. Peter

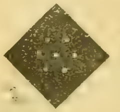
Robertson has tried crossing H. maximus with Olympicus and niger, but without any good result. H. maximus may be but a variety of the common Christmas Rose, but wiser heads than mine believe it to be a species. Neither in England, nor in the south of Scotland, have I ever seen this plant, equal either in colour of leaf or growth, to what I have seen it in Aberdeenshire. Those to whom this Christmas Rose was new were delighted with the fine clumps of it which they saw about Aberdeen; and, truly, in out-of-the-way gardens there, judging by the foliage, it might easily have been mistaken for a Peony. Leaving H. maximus, I want to elicit information respecting H. angustifolius, which, if my plant is true to name, has large white flowers, tinged on the back with rose. It is a most desirable variety, and one which, owing to the time at which it flowers, is more useful even than H. maximus, coming in, as it does, at least two months later than that kind, and with me a little earlier than H. niger. That it is a strong grower is proved by our reserve beds of it having been taken by a good judge of Christmas Roses for those of H. maximus. In another part of the garden, however, where the two kinds grow side by side, H. angustifolius could never be mistaken for either H. maximus or niger. Mr. M'Nab told me the other day that there is a major variety of H. niger, distinct from H. maximus; and certainly our H. angustifolius would suit such a name. Its flower-stalks, which bear two and three flowers on a stalk, are comparatively tall and stout, a great advantage as regards keeping the blossoms clean and convenient for cutting. It is a very free flowerer, and it ripens its seed. Believing that no variety of H. niger would seed here, we cut weekly, last winter, all the flowers off our border of H. angustifolius for an hospital, and one expanded bloom of it made a good centre for little bunches of Thyme and Rosemary, which are favourites in such places. On breaking up the border in June we found a single stalk that had been overlooked furnished with a promising seed-vessel. The plant which produced it was at once re-planted in a south border, and on the 15th of July the seed-vessel burst, and twelve good seeds fell out, which were sown then and there in a pot, and set in a cold frame, the result of which I am patiently waiting to see. This particular Hellebore I got five years ago from Mr. Anderson Henry. I was attracted by its tall growth and fine flowers. I saw, by its stature, that with liberal treatment and care it would succeed with us, and I have not been mistaken. Its rhizomes are like those of H. niger, but it is distinct from both that and H. maximus. F. J. Hope.

Wardie Lodge, Edinburgh.

PRESERVING CUT FLOWERS IN WINTER.

Where cut flowers have all or nearly all to be procured from under glass, as they have to be in winter, a both extensive and well-selected stock is needed to meet the various demands made upon it, one of the greatest of which is that for flowers with which to decorate churches, more especially at Christmas. In reference to this, I have lately made some observations respecting the relative duration of cut flowers in the cool, moist air and subdued light of such situations, and of those exposed in the dry air and strong artificial light to which they are subjected in reception rooms. The majority of cut flowers used for church decoration here were Eucharis amazonica, white Camellias and Primulas, and the scarlet Poinsettia. Of these, some were arranged in tubes of water and some in beds of damp Moss, and after the lapse of a fortnight they were, for the most part, found to be quite fresh, whereas the same varieties used in drawing-room stands needed replenishing several times during that period. In order to obviate the great waste that occurs in floral decoration, various expedients have been resorted to, such as using different kinds of water, the addition of chemicals, &c.; but the only real remedy is a cool atmosphere, and the removal of stands from the immediate neighbourhood of fire-places and lamps; for I find that, on account of its dryness, the heat from these is more destructive to flowers than the greatest heat of summer. Those, therefore, who do not possess large reserves of flowers with which to replenish their vases will do well to make their floral displays in the coolest positions possible, removing the stands, when not in use, to a cool cellar or some such situation. It is also indispensible, for the economical arrangement of flowers, to have vases of various sizes; for, while many of the most useful flowers cannot be procured with stalks long enough for deep vases without greatly disfiguring the plants from which they are cut, they may be made to look very effective in flat decorations. For this purpose, I find nothing better than glass baskets about 6 inches in diameter, a size serviceable both for dinner table and drawing-room. For edgings, I am by no means in favour of always using Fern fronds, for even where the choicest varieties are employed for that purpose they become monotonous when constantly repeated. I like stands in which Roses predominate to be edged with Rose leaves; while, in the case of Geraniums, I would edge with the Oak and scented-leaved varieties, as nothing, in my opinion, adds more to the beauty of a flower than surrounding it with its own foliage. As regards the height desirable for vases, all depends on the size of the apartment in which they are to be placed. We use trumpet-shaped vases 6 feet high, filled with the largest spikes of Cannas, Hedychiums, &c., and, by the side of large mirrors, or in lofty entrance halls, vases of this description produce an excellent effect; but in small rooms, or when filled with small flowers or foliage, their appearance is by no means pleasing. The best effects are most readily obtained by the use of moderate-sized vases, as the material for furnishing them properly is much more varied. Highly-coloured or figured vases are objectionable, inasmuch as both colours and figures detract from the effect. For the arrangement of cut flowers no specific rules can be laid down; but it may be well to bear in mind that the more nearly the flowers are placed in the positions in which they grow naturally, the better will be the results. Sprays of climbing or trailing plants should hang gracefully over the edges of the vases, for when reversed, as is sometimes seen in flat decorations, the effect is stiff, formal, and unnatural.

Henham Gardens. J. Groom.



Barham's Worm-proof Pot Drainer.—This is an invention sent to us by Messrs. Dick Radclyffe & Co., for preventing the entrance of worms into pots, and one which has been found to be very effectual for that purpose. It consists of a square piece of perforated zinc, the outer side of which has a jagged surface, and that being placed downwards over the hole in the bottom of the pot, effectually prevents the ingress of worms, while it does not prevent their egress should they happen to get in among the soil. As a drainer, too, it cannot fail to be efficient.

Hyacinthus candicans.—This remarkable species of a well-known genus proves to be a most ornamental cool greenhouse or border plant, for it is so accommodating as to be equally suitable for both places. It forms a large bulb of about the size of the common Hyacinth, from which are produced several long strap-shaped leaves, from the middle of which is thrown up the flower scape. This is from 2 to 2½ feet in height, or even more under glass, and bears on its upper half from twenty to thirty large bell-like flowers, of a creamy-white colour, on drooping foot-stalks. It is a plant of easy cultivation, and may be raised from seeds with facility, but the young plants will not flower until the fourth year. The full-sized bulbs being at present somewhat high priced, seeds offer an economical means of obtaining a stock. It is a native of the Cape of Good Hope.—W. Thompson, *Ipswich.*

Carnations in Window Boxes.—Anyone who is familiar with the south of Europe must recollect with pleasure the beauty of the boxes of Carnations which deck the windows of the houses, hanging down loaded with heavy flowers. I do not recollect to have seen Carnations grown on window-sills in this country; but I intend to try them this year. They naturally prefer walls and dry places, and everything they require can be supplied more easily in boxes than in beds, such as drainage, sunlight, free air, &c.—Salmoniceps.

Poinsettia as a Table Plant.—The simplest and most effective floral ornament for the centre of a dinner-table that I have seen for some time consisted of a few well-grown and dwarf plants of Poinsettia pulcherrima grouped in a low vase. The bright colour so effective by artificial light, the relief afforded by the ample green leaves, and the dwarfness of the plants, allowing a free view across the table, are advantages which make it the prettiest single plant obtainable for the purpose at this season.—R.

Dead Vine Roots.—The Vine roots sent by "Tyro," show no appearance of Phylloxera. But a more complete account of the circumstances under which their decay has taken place, would be necessary to enable us to give an opinion as to the cause of their death.—A. M.

NOTES OF THE WEEK.

—— The American Squashes have at last appeared in Covent Garden, and are obtainable at Mr. Lehain's. The kinds are the famous Hubbard and Turban, both raised by Mr. J. J. H. Gregory, of Marblehead, Mass., by whom the consignments now in the London market have been sent.

—— Pears have not been so well flavoured this season as usual, doubtless through want of sunshine in autumn. Ne Plus Meuris forms, however, one exception to this rule. It is at all times a good late Pear, but this season it is unusually excellent.

—— Among specimen Orchids shown at South Kensington, on Wednesday last, was a remarkable Australian Dendrobe, having curious slender white petals and a curled lip. This proved to be the old D. teretifolium which bloomed thirty years ago in Loddige's collection, at Hackney. Sir W. Marriott, of Down House, Blandford, sent a splendid specimen of Cattleya bulbosa, on a block, bearing fifteen fully expanded flowers; and a specimen, with ten flowers on it, of the new golden-flowered Masdevallia Davisii, came from Mr. Burnley Hume's collection, at Winterton.

—— Captain Raikes, of the Floral Depot, Baker Street, sends us a beautiful example of a new kind of bouquet which he proposes to introduce, and which he names the Fan Bouquet. It is formed like a fan, with satin plaitings on one side and a bouquet on the other. Captain Raikes considers this more convenient for opera bouquets, &c., than the old form in which the flowers were injured when the bouquet was laid down. The fan bouquet may not supersede the old form for ordinary use, but it will prove more convenient for certain purposes. It may be made in a variety of tasteful forms, and is a desirable innovation on the time-worn way of making bouquets.

—— Abies excelsa aurea, a distinctly golden-tinged variety of Fir, should be added to our at present somewhat short list of variegated Conifers. We recently saw some healthy plants of it in Messrs. Lee's nursery, at Feltham, where, contrasted with green-leaved plants, its yellow hue was set off to advantage. Indeed, the great value of these golden Conifers, Aucubas, Hollies, and similar evergreens, consists in contrasting them with masses of dark-foliaged trees and shrubs for winter effect. This variety was exhibited, and received a first-class certificate at South Kensington, last year.

—— In the fine collection of Orchids at Whitchurch Rectory, Edgeware, belonging to the Rev. J. B. Norman, there are some very choice varieties of Lycaste Skinneri now in flower; amongst others, two fine plants of L. S. alba, with five blooms, also some fine varieties of Odontoglossum Alexandræ, Hallii, radiatum, and Andersoni; Masdevallia polysticta, with twenty spikes, M. elephanticeps, and choice varieties of M. Veitchii. A fine plant of Cœlogyne cristata, purchased at the Manley Hall sale, is showing over 200 spikes of bloom. This collection, although it has been got together in about three years, contains some of the finest plants that have been in the market during that time.

—— From a report furnished by Prof. Beal, of Michigan Agricultural College, it appears that experiments have been made on the grounds of the college with a large number of new and old varieties of Onions. From these experiments, Prof. B. recommends as most valuable the Red Wethersfield and Early Red Globe, for red Onions; although not quite so good in quality as the yellow and white varieties, they yield and keep well, and are rather more hardy. For yellow Onions, the Yellow Danvers and Improved Large Yellow are best. The white sorts are most delicate, and need careful handling; the best are White Globe and White Portugal. The Giant Rocca, Southport, Late Globe, and Giant Madeira, were large and productive, but did not ripen.

—— Large tracts of land in the south of France, not hitherto cultivated, are being planted with the kind of Oak trees beneath which Truffles are generally found, and it is expected that each acre of this land, lately sold as low as £5, will yield a crop of Truffles worth £20 per year. The experiment has been tried in the department of the Vaucluse, and in the course of the last twenty years, 150,000 acres, which were absolutely unproductive, have been planted, and are yielding a rich return. The cost of plantation, which is borne by the Commune, does not exceed 17s. per acre on hilly ground, and though rather greater in the lowlands, the crops are proportionately heavier. Acorns only are planted on the hilly ground, but saplings of five or six years' growth, placed in rows about 40 feet apart, are found to answer best in the lowlands. The ground between the rows is planted with Vines, which, after five or six years, repay the cost of the plantation and its culture.

—— The "St. James's Magazine," for February, will contain an article on the Royal Horticultural Society, by Mr. W. A. Lindsay, who was for two years its secretary.

LONDON PARKS AND TREES.

Arboriculture in London has, no doubt, made some progress during the last few years, but anyone who walks about London with his eyes open may still constantly see such instances of neglect in the arrangement of trees, and even of sheer waste of public money, as to make him doubt whether those in authority over the parks can have any practical knowledge of the subject whatever. As an instance of this neglect I cannot forbear calling attention to the state of the row of trees, alternate Planes and Elms, in the Green Park, alongside Piccadilly. The Planes were, I suppose, planted about fifteen years ago, with the idea of superseding the Elms, which are, as is usual with all young Elms in London, of very stunted growth. They (the Planes) have grown well, but have been suffering for some years from close contiguity of the Elms. Anyone may see that something ought to be done in this case, but it looks to me as if those in authority meant to wait till both Planes and Elms were spoilt before they made their choice between them. As an instance of sad waste of public money, I will name (what I daresay many others noticed at the time) the absurd and most unsuitable selection of trees planted some years ago on the rockery at the lower end of the Serpentine. I have often thought I should like to have seen the bill for the Pinuses, Thujas, and other trees of the same nature which were then planted only to die, and of which I do not think one could now be found. "W. R.," in last week's Garden (see p. 70), takes a very hopeful view of what may be done with trees in London, but even he eschews evergreens of almost every kind. I should venture to think that many of the trees which he names as doing well in London have grown up into large trees before London had become what it is now, and that newly-planted ones of the same variety will not thrive. With regard to Hawthorns of various kinds, the planting of which "W. R." advocates so much in London, I should be quite inclined to agree with him if it were not for the plague of caterpillars that infest them about the end of June every year in London, rendering them, for a great part of the summer, most unsightly objects. I shall be glad if any of your readers can give any information as to this insect pest, which seems to abound in London, and which is hardly to be found in the country. F. S.

Ricinus Gibsoni and its Culture.—Now that the season is at hand for procuring a stock of seeds for the sub-tropical and flower gardens, I venture to recommend this Castor-oil plant as the finest and most useful that has been introduced for many years. Associated with Mangles's Geranium or Lady Plymouth, it makes a fine bed and one which breaks up that flat appearance which is too common in flower gardens. It is quite distinct from everything else, and its free outline and quick growth are not the least of its recommendations. In cultivating it I should sow the seed in February or not later than March, in a gentle bottom-heat putting one seed in a small pot; when they come up and the young plants have filled the pots with roots they should be potted into 7 or 8-inch pots in a good rich compost, and should be kept in some warm house; a Vinery at work suits them perfectly, provided they can be kept near the light. If it is necessary to keep the plants dwarf they may be stopped after they have made two or three leaves; in May they should be gradually inured to the open air, and by the end of the month they may be planted where they are intended to grow during the summer.—W. O., *Fota.*

Spring Flowers and their Colours.—Some interesting observations on the flowering of spring plants were made, the other evening, at a meeting of the Edinburgh Botanical Society, by Mr. Buchan, who, with a view of discovering what lessons may be learned from the budding, leafing, and flowering of plants and trees, has collected much curious information on the subject. It appears from the result of noting the average dates of flowering of thirty-two species in the Royal Botanic Gardens during twenty-six years that the six latest springs were—1855, when the flowering was thirty days later than the average; 1870, when flowering was sixteen days; 1853, fourteen days; 1856, thirteen days; 1857 and 1865, each twelve days later. The five earliest springs were—1874, when flowering was twenty-three days earlier than the average date; 1869, when it was nineteen days; 1851, thirteen days; and 1858 and 1866, each eleven days earlier. The two extremes show a difference between the dates of flowering in different years of fifty-three days. The longest deviations from the average were before the equinox. As to the relations which these effects have to temperature, it was found that the mean temperature of Edinburgh fell to its lowest on the 11th of January, when it was 34·8°, and from this point it may be assumed that meteorological conditions commence which result in giving vegetation a start. Another question of great interest is the relation of the colour of flowers to their date of flowering. Taking 909 species of British flowers, 257 were found to have white flowers ,238 yellow, 144 red, 94 purple, 87 blue, the remainder being green and other colours. Of the blue flowers, 16 per cent. bloomed in April; 14 per cent. of the white flower bloomed only in that month, but only 9 per cent. of the reds, the yellows being very close to the latter. It thus appeared that the blues were far ahead of the reds and yellows, the whites being intermediate, and the purples and greens came in between the blues and the reds. This indicates the existence of some general law which arranges the flowering of plants in the British flora according to the colours in the spectrum.

Ivy and Trees.—Most practical men, who have had any experience in woodcraft will, I think, endorse Mr. Berry's statement upon this subject (see p. 50). If Ivy is allowed to grow unchecked, it has, I believe, pretty much the same effect upon trees everywhere; but, in some districts it will be found more difficult to keep within bounds than in others. In some woods, I have known even the ground under the trees to be carpeted with it, and every tree trunk, if not periodically cleared, would soon be covered with it. I have generally found it to make the most rapid growth on porous, well-drained soils. On rough barked trees, such as Oak, Elm, and Walnut, it makes, if unchecked, rapid progress, quickly occupying not only the trunk but also the main branches, until at last the only signs of life to be seen in the supporting trees are in the extremities of the branches. I admit that a wood, in which the trees are draped with Ivy, has a picturesque effect, and that on every estate, for the sake of this alone, a few trees might be given up to it; but, as your correspondent remarks, where timber is grown for profit, it should be cleared of Ivy.—E. HOBDAY, *Ramsey Abbey*.

An Open-air Ice-house.—Ice may be stacked in the open air in such a manner as will preserve it for nine or ten months, or even longer. After we have filled our ice-house, our plan is to make two large stacks in a valley overhung with spreading trees, but not immediately over the stacks. At the bottom of the slope (a north-east one, and one which is rather steep, thus affording ample drainage) we commence our stacks, and build "up hill" about 15 feet from the edge of the cartway—which has been made for the occasion. Some hurdles are placed at the bottom, forming a kind of semicircle, to prevent the ice when "tipped up" at the top from overshooting its bounds at the bottom. The ice, the same as in an ice-house, is well broken and rammed together, and boiling water is applied as the work proceeds to consolidate it. When the stack is headed, a man, with a ladder placed against it, spade in hand, commences at the top, and trims the whole stack right round to the bottom, thus filling all the crevices with the descending "ice dust," which is well beaten in as the operator progresses with his work. This done, the whole is covered with sifted sawdust 3 inches thick, then 2 feet thick of leaves, over which some long litter is placed to prevent the wind from blowing the leaves off; and, as a "finishing touch," the stacks, or ricks, are enclosed by hurdles which are fastened by tar twine to stout sticks driven into the ground, by which means cattle are kept off. I have seen many ways of preserving ice out-of-doors, but never have I seen any to answer so admirably in every respect as the one just described.—H. W. WARD.

Birds in the Botanic Gardens, Regent's Park.—Some time ago, when I sent to you a list of the birds seen by me in the Botanic Gardens, Regent's Park—which comprised several kinds, one could hardly expect to see there such as the goldfinch, kingfisher, siskin, and tree-creeper—I made the remark that I had not been able to meet with the bullfinch myself, although I had heard from one of the officials there that he had some years ago not only seen, but captured one. This winter, however, I have seen one several times. I first heard the note distinctly, and, feeling sure that it was not an imitation, as it was very early in the morning and no one was about, I crept quietly to the point whence I heard the note, and saw a fine cock bullfinch in good plumage. I have seen him several times since, and one of the gardeners tells me he has seen a pair—a cock and hen—but I have only seen the former myself. I may now mention that, since the late mild weather, the birds have been singing magnificently every morning in the Botanic Gardens soon after daybreak; in fact, there has been a complete chorus of the birds which sing in the warm days of winter—thrushes innumerable and robins abundant, with occasionally the clear pleasing note of the hedge sparrow and the merry double note of the titmouse; and, amidst all this tumult, could be heard on several occasions the deep, broken, yet not unpleasing notes of the mistleto thrush. It was curious to notice how little effect a sudden great lowering of the temperature has upon the notes of these birds. For instance, on one Sunday morning lately, the temperature was 31°, with a severe hoar frost, but the air was calm; nevertheless the birds were singing as well as they did on the morning before, when the temperature at at 8 a.m. was 45°. If, however, the low temperature lasts for any time, the birds cease singing; moreover, if there is any wind with a low temperature, they are silent.—HENRY SMITH, in "Field."

THE PAMPAS GRASS AT LONGLEAT.

THIS succeeds well here, and is planted out in the wild ornamental coverts rather extensively, chiefly in groups of three, five, or more plants, in proportion to the extent of their surroundings. Single specimens, possessing distinct colours and uncommon forms, are planted in suitable nooks, where space is more limited, and also in groups here and there, for the sake of contrast; but the best effects from Pampas Grass are obtained by forming clumps, or groups, on slightly-raised mounds in front of masses of Rhododendrons, Laurels, or other dark-foliaged shrubs of large growth. Of the different varieties, the upright silvery kind is the most striking, and the one which retains its beauty for a much longer period than any other. The drooping form of plume is handsomest; but, unless it be supported by means of stakes and string, numbers of them get broken down by the wind before the whole of the panicles are fully developed; for this reason, this particular variety should be planted in the most sheltered positions, and not exposed to cutting winds, but at the same time it should have a dry airy site on a porous sub-soil, and should be planted on raised mounds like the others. The Pampas Grass is rarely cut down here by severe frosts; it should, however, be slightly protected before winter sets in by tying up the foliage in the shape of a cone, with a Willow band or tar-cord; this helps to prevent snow and rain from settling down into the crown of the plant, an evil from which so many throughout the country perish; a kind of rot is induced by the hearts being alternately wet and frozen. A few Fir branches, stuck in round each plant, serves to protect it from ground game. In planting Pampas Grass, the soil should be well trenched to a depth of 15 or 18 inches, and about a cartload of road parings, road drift or fibry turf should be given to each plant; a heavy mulching of manure should also be spread on the surface after planting, the manure being covered with Bracken or Fir branches to prevent game from scratching it away, and to render it less objectionable to the sight. After the plants have become established they will derive great benefit from a covering of leaf mould being spread over the surface around each plant, or group of plants, every autumn. GEORGE BERRY.

Tom Put Apple.—Mr. Scott states (see p. 50) that the Apple which I described (see p. 27) differs from the true Tom Put; but I see no reason to alter the opinion which I expressed respecting it. Tom Put is as well known in this district as any sort grown. Mr. Ellacombe is right in saying that it is not a good keeper; for I find that it only keeps well until Christmas, when it becomes moist and sticky in handling, and has a bruised appearance, many being soft or "sleepy." Mr. Scott states that my description of Tom Put refers to an Apple known in Somerset as the Colebrooke, which he says closely resembles Hoary Morning. The latter is known here by the name of Sour Woodbine; but in North Devon as Hoary Morning. It is quite distinct from Tom Put, both in fruit, fruitfulness, and habit of growth. A good-sized tree of it here, about forty years old, bears, as a rule, well every alternate year. Two trees, headed down and grafted with it where they stood in the orchard ten or twelve years ago, are growing well, and have made new heads 15 or 20 feet through; but have never borne a bushel of Apples since they were grafted, whereas Tom Put always bears well, and therefore grows slowly. Hoary Morning keeps well up to Lady-day, and is a handsome good carnation-striped culinary Apple, which, when gathered, is covered with a beautiful bloom equal to that found on some Plums.—JOHN GARLAND, *Killerton, Exeter*.

Gladiolus Cooperi.—A very curious species, reminding one of G. dracocephalus in form, but brighter in colour. It is a native of Natal and the Cape; the flowers are yellow, profusely streaked with red, the lower divisions being nearly pure yellow. Although scarcely so attractive as G. Saundersii, G. cruentus, and one or two others, it is nevertheless well worth culture, and, as Dr. Hooker remarks, the advent of these new forms enlarges "materially the groundwork upon which hybridisers can carry forward their experiments." The present plant was found by Mr. Thos. Cooper, when collecting for Mr. Wilson Saunders. "Botanical Magazine," t. 6,202.

Ross Nonpareil.—This is at present one of our best dessert Apples. It grows well and forms a handsome orchard tree, which bears freely every year. It also succeeds as a small pyramid or bush tree. I have been told that there are two varieties of this Apple, one very inferior to the other, but it is the best sort to which I have just alluded.—J. G.

Northern Spy Apple.—I bought a young tree of this some years ago, took grafts from it, headed down a healthy young tree in the orchard and grafted it with the Northern Spy; the grafts grew freely, but never bore an Apple. Last spring I headed it down and re-grafted it with another sort; the tree which I bought grows freely, but has never borne more than four or five Apples in one year. They are very handsome, and keep well, but the tree is too shy a bearer to be worth growing.—JOHN GARLAND, *Killerton, Exeter*.

THE FLOWER GARDEN.

ROOT-WORK.

My experience of root-work is less unfavourable than that of your correspondent (see p. 32). In 1871, the only root-work which I had seen was one small one, which had a pretty effect, and which appeared to agree with the plants grown on it. Having a north bank near the house to be made ornamental, I consulted a gardening friend, who had considerable knowledge of root-work and also good taste. He helped me to put up a root-work bank, which, with its curves, was about 100 feet long, and about 10 feet high at its highest point; and there was also a long mound about 40 feet long by 10 feet wide. While these were being proceeded with, I had the means of consulting the very highest authorities, both scientific and practical. About half spoke of root-work as your correspondents write of it; the other half thought very well of it. I took the hopeful view myself, but thought it only prudent to put up a quantity of brick burr-work, and afterwards of sandstone rock-work. I have therefore had the means of comparison. I do not think Cyclamens could look as beautiful in rock-work as they do in root-work. Cyclamen vernum, blooming in its bay, in contrast with the dark wood, makes a picture which would have been more than once taken had not the flowering-time been during such cold weather. Cyclamen hederæfolium, whose beautiful leaves crowd up to its recess, flourishes so that a few days back I took away from it sixty seed-bulblets with a leaf to them. Trillium grandiflorum, Epimediums, &c., half-way up, thrive well; but I think in the upper parts, dwarf shrubs, such as Skimmia japonica and oblata, Pernettya, Azalea mollis, Sedums, very dwarf Rhododendrons and Retinosporas, Andromedas, Spiræa palmata, Menziesias, &c., together with strong creepers, such as Waldsteinias, Arenaria grandiflora, Acænas, Lithospermums, Fragarias, &c., have the best effect; Campanulas, large and small, do well. In the lower caves, Hepaticas thrive thoroughly. Slugs are troublesome, but not so much so as in the burr bed. I have read that in some places where peat cannot be had, Heath plants are grown in rotten wood. Gaultheria procumbens is in absolute perfection and beautiful—first, as regards its bell-shaped blossoms, and afterwards its berries—the roots creeping between the bark and wood; Linnæa borealis, too, would I think vote for wood rather than rock. If the roots are well embedded in the soil, no serious slips, I think, are likely to take place. What I most dreaded was the tendency to foster "evil-smelling fungi," but these appear to be under control. The beautiful shades of green of the different Mosses that in many places clothe the wood and soil greatly add to the beauty of my root-work, which work was noticed in The Garden, Vol. V., pages 323 and 345, when it was thought to be "a pretty object."

Heatherbank, Weybridge. George F. Wilson.

Begonia Frœbelii.

New Hardy Begonia (Begonia Frœbelii).—This distinct and beautiful Begonia, to which I have before alluded (see p. 543, Vol. VIII.), deserves additional attention on the part of cultivators and hybridisers, inasmuch as it is sufficiently hardy to be cultivated on sheltered portions of rock gardens in favourable localities. A month or two ago I saw a plant of it in one of the greenhouses at Chiswick, and was struck by its distinct habit of growth, all the leaves being radical, and by the profusion with which its large panicles of crimson-scarlet flowers were produced. At Cologne, I am informed, it has been used with success as a bedding plant, and there seems every reason to believe that, by forming prepared beds of peat, turfy loam, and leaf mould, we might even, in this country, use not only this, but many of the new hybrid forms of B. Veitchii, B. Clarkei, B. Boliviensis, &c., in our flower gardens and on sheltered rock-work.—B.

Lilium nepalense.—I was glad to hear from Mr. Barr that he has just received a few bulbs of the only true Lily still known in India which has never been introduced, viz., Lilium nepalense. This plant, which is allied to those magnificent species L. Wallichianum and Neilgheriense, is figured only in Wallich's "Plantæ Asiaticæ Rariores," and, as far as I know, has never been in Europe before. The bulbs, which were in good condition, are small and pear-shaped. From the account given by Mr. Barr's correspondent, the plant will be as hardy if not more so than L. Wallichianum, which remained green in my garden until December. There are only two Lilies now wanting of which we have any certain knowledge, viz., L. avenaceum and L. medeoloides, both of which are natives of the coasts and islands of north-eastern Asia.—H. J. Elwes.

Species of Tulip.—In the notes on new plants in last week's Garden (see p. 47), Tulipa Eichleri is mentioned as having been introduced by me. This is not quite the case, as though I believe I was the first to flower it in England, I had nothing to do with its introduction. My bulbs came from Dr. Regel, of St. Petersburg, and from my friend, Herr Leichtlin, of Carlsruhe. I rather fancy that the plant was introduced by Messrs. Haage & Schmidt, of Erfurt, under the name of Tulipa Julia, but am not sure of this. I am glad to say that the firm in question have re-introduced, among other varieties, the pretty and peculiar-looking little Tulipa biflora, a Russian species which has been lost or unheard of for many years. Let us hope that other bulbs from the same country, such as Rhinopetalum Karelini, recently figured in the "Flore des Serres," Korolkowia, Severtzowi, &c., may soon follow.—H. J. Elwes.

Rose Captain Christy.—This is the beginning of quite a new type of Rose, and its whole habit clearly indicates its being, without doubt, a hybrid Tea. It is an evergreen, and it blooms much more beautifully and in better form under glass than out of doors in this country. It becomes delicate late in autumn out of doors, and will not live on the Manetti stock. "Captain Christy," says the "Floral Magazine," "was almost the first Rose in bloom out of doors with Mr. Bennett at Stapleford in the spring; it continued to flower all through the summer, and was particularly fine in the middle of November last. The fact of this Rose being a hybrid Tea quite upsets the theory entertained by many Rose-growers that the Tea Rose will not blend with the hybrid Perpetual. Captain Christy was originally raised by M. Lacharme, a grower who has perhaps produced more really good Roses than all the rest of the raisers put together; and we have his authority for stating it to be a true hybrid between Victor Verdier fertilised by the Tea Rose Safrano. 'Here is a sketch,' says M. Lacharme, in a letter to Mr. Bennett, 'of my seed-bearing Roses, planted against a wall and facing the south. The first flowering is from the 15th of April to the 13th of May, and is useless for seed, for the flowers are very full, little disposed to bear reproductive organs, and still less adapted for fecundation. It is necessary to restrain this first blooming, so as to arrive as soon as possible at the second flowering, which commences at the end of June. This latter blooming is the best for fertilisation, for now the flowers are less full, the reproductive organs are more fully developed, and the fine dew of summer is a great aid to fecundation. Some growers practise artificial fertilisation, but I have little faith in it. It is necessary that the specimens to be hybridised should be from ten to twenty years old to produce really good new kinds.'"

The Line of Greatest Danger from Frost.—A correspondent of the "Gardeners' Chronicle," says that it is not sufficiently known that a thermometer placed 1 foot from the ground reads lower than one at 4 feet high. By calling attention to the fact, it may, perhaps, warn us to provide shelter accordingly for all very dwarf-growing subjects. It may be serviceable, too, perhaps, to note that it is low-growing subjects from 12 inches downwards that suffer the most from a severe frost. From observations made in 1860 and 1871 the frost line appears to reach its maximum from 8 to 14 inches from the ground.

GARDEN VEGETATION IN DECEMBER.

By JAMES M'NAB, Royal Botanic Gardens, Edinburgh.

DURING the early part of December the weather was very changeable, and we had a good deal of frost, snow, and rain. On the 5th snow laid on the ground to a depth of 6 inches; it remained about a week, when it suddenly disappeared, and after that high winds and rain prevailed until the end of the month; on twelve days only was the thermometer at or below the freezing point, indicating collectively 81°—of this number 75° were experienced during the first fifteen days, while 6° only were registered between the 15th and the end of the month. During December, 1874, the thermometer was on twenty-eight mornings at or below the freezing point, indicating collectively 277° of frost, 19° occurring during the first fifteen days, and 198° between the 15th and the end of the month. The six lowest temperatures experienced during December, 1875, were on the mornings of the 1st, 3rd, 4th, 5th, 7th, and 15th, indicating respectively 22°, 25°, 25°, 22°, 24°, and 23°, while the six highest morning temperatures were on the 13th, 14th, 26th, 27th, 30th, and 31st, when 39°, 39°, 40°, 43°, 43°, and 44°, were indicated. The following table shows the amount of frost during December, for the last thirteen years:

1863	50	1867	41°	1870	120°	1873	36
1864	75	1868	22	1871	59°	1874	277
1865	16	1869	119°	1872	51	1875	81
1866	31						

A table, compiled from a series of notes made on garden vegetation, during the year 1875, shows that 658 species and varieties of Alpine and dwarf herbaceous plants have flowered on the rock-garden during the past twelve months. The numbers just given are considerably below those of species cultivated on it, but it gives a fair idea of the proportion of Alpine plants that flowered during each of the last twelve months. This list, however, does not include a number of dwarf Alpine shrubby species, which do not flower regularly, nor many species of plants which do flower, chiefly belonging to the genus Saxifraga, Sempervivum, and Sedum. These, however, will be given in a third table presently. The following table shows the number of species as they came into bloom during the year:

Jan.	13	May	162	Sept.	15
Feb.	18	June	140	Oct.	3
March	55	July	73	Nov.	1
April	123	Aug.	49	Dec.	6

The above table shows a rise in the number of species as they came into flower during each month up to May, after which, as will be seen, they begin to fall off. On the 15th and 16th of May twenty-one species are recorded as having flowered, which is more than did so during any other two consecutive days throughout the year. With ordinary cultivated border herbaceous plants the largest number of species is generally to be found in bloom during June and July. Besides the general list given of Alpine plants flowering during each month, and made up from daily observations, a list has also been kept showing the duration of blooming of many plants. In some cases it has been found that certain species remained in flower for one, two, or more weeks, while others continued in a blooming condition for two or three months successively. Five species, however, were observed to be in a flowering state for four, five, or more months together, such as the Veronica rupestris, Lithospermum fruticosum, Androsace lanuginosa, Bellis rotundifolia, and Linaria alpina. Of these, the first has been in flower in one place or another of the rock-garden during every month of 1875, and the Lithospermum fruticosum since the 13th of April. During the month of December the following additional species have come into bloom, viz., Helleborus orientalis, H. albicans, H. niger, Primula denticulata, Andromeda floribunda, and Erica herbacea alba. This last is really a charming variety, having pale green leaves and pure white flowers, and it blooms much earlier than the ordinary Erica herbacea or carnea. Besides the above, we had also in bloom on the 31st of December, and noticed in the November and previous lists, Helleborus niger maximus, Primula vulgaris rubra, Gentiana acaulis, Veronica rupestris, Hepatica triloba, Lithospermum fruticosum, and Sternbergia lutea. Notwithstanding the unfavourable weather experienced during the month, this plant has wonderfully improved both as to the quantity and quality of its blooms. All of the above are growing in the stone compartments of the rock-garden, as described in my notice of garden vegetation for November, 1875. The following table gives the number of species and varieties (exclusive of duplicates) counted in bloom on the rock-garden on the last day of each month during 1875. The number given is large in comparison with the table which gives the number of species as they came into bloom during each month. This, however, is to be accounted for by the number of duplicates grown, particularly of good flowering species, many of them being placed in positions more or less exposed to the sun, and at different elevations, where a longer duration of their flowering period is obtained. By this means, the same species of plants frequently counts in two or more months. The excess of August over July is chiefly accounted for by the number of varieties of Calluna and Erica then in bloom. In this table, also, May stands in excess of all the other months, as regards plants in bloom:

Number of species and varieties in bloom on the last day of each month in 1875.

Jan. 30	13	May 31	300	Sept. 30	95
Feb. 28	30	June 30	273	Oct. 31	86
Mar. 31	56	July 31	207	Nov. 30	20
April 30	150	Aug. 31	263	Dec. 31	13

SOME NEW ANNUALS AND PERENNIALS.

Eryngium Leavenworthii.—The genus Eryngium furnishes a small number of highly interesting perennials to our gardens, some of which are remarkable for the attractive blue or purple colour of their flower-heads and involucral leaves; others, for their Bromelia or Pandanus-like spiny foliage, and tall paniculate stems. The species of annual duration are, however, very few in number, and include probably but one possessing any interest for the horticulturist, E. Leavenworthii. It grows from 2 to 2½ feet high, with an erect grooved stem, branched in its upper half, and bearing palmately-divided leaves, 2 to 3 inches long, with five to seven segments, spinously cut and toothed. The flower-heads are of an oblong-conical form, and about 1½ to 2 inches in length, with an involucrum of narrow strap-shaped leaflets, spinously serrate and cut; the head is also crowned with a tuft of short rigid spiny leaflets, resembling those of the involucrum. In their early stages the flower-heads are green, but after attaining their full growth they assume a rich deep violet tint, as well as the involucrum, coronal tuft, and foot-stalk, which have, in addition, a fine metallic lustre. As in the case of E. amethystinum, and some other species, the heads preserve their colour for some time after being cut. This species requires the treatment of half-hardy annuals, and being a somewhat late bloomer, should be sown early in heat, or in a greenhouse, in which case it will produce its flower-heads in September and October. It is a native of Texas.

Hedysarum Mackenzii.—The species of this genus of Leguminosæ, hitherto cultivated in British gardens, are exclusively natives of the Old World; the lover of hardy perennials will doubtless therefore be ready to extend a cordial welcome to the present introduction, which claims attention both as a denizen of the New World and for its intrinsic merits, for, according to Dr. Asa Gray, this species is probably the handsomest of the genus. It grows about 2 feet high, with stems decumbent at base, pinnate leaves, with about five pairs of oblong or lanceolate leaflets, and long racemes of from seven to thirty rather large Pea-like flowers, of a rosy-purple colour. It is perfectly hardy in any situation, and flowers in June and July.

Helianthus cucumerifolius.—Of the several species of Helianthus of annual duration which are known to science, none better deserve cultivation than the subject of the present notice. It cannot vie indeed with the common Sunflower and its varieties, in the size of its flower-heads, but this is more than compensated for by the abundance with which they are produced, and the lengthened period of bloom, as well as by its less formal growth. The Helianthus cucumerifolius grows from 3 to 5 feet high, and is of branching habit, with scabrous, purple-stained stems, and medium-sized bright glossy green serrated leaves, of a triangularly heart shape, on rather slender foot-stalks. The flower-heads are from 3½ to 4 inches in diameter, with about fifteen deep yellow broadly oval ray florets, and a dark purple disc, reminding the observer of the well-known Rudbeckia speciosa, but are twice as large. The effective contrast afforded by the colours of ray and disc is, moreover, much enhanced by the evenness of the ray, a feature in which some other species are greatly deficient. It is altogether a very desirable annual, and is certain of a favourable reception by all true plant lovers. This species is a native of Texas, and succeeds in any garden soil, with the treatment of half-hardy annuals; and will probably succeed if sown in the open ground in April. The seeds are among the smallest of the genus, being scarcely one-half the size of those of H. argophyllus.

Œnothera sinuata.—The typical Œ. sinuata has been long known to botanists and cultivators as producing probably the smallest flowers of any species of the genus, certainly the smallest in proportion to the size of the plant. This variety has the good fortune to be remarkable for the magnitude of its flowers, thus affording another illustration of the proverb that extremes meet — in fact, the difference between the inflorescence of the present plant and that of the original Œ. sinuata is so great, that the casual observer would suppose them to belong to an entirely distinct species. The Œ. sinuata maxima is an annual plant, reaching ultimately the height of 2½ to 3 feet, but flowering freely when only a foot high. It is of erect branching habit of growth, with small neat foliage, from 1½ to 2 inches long, ovate or ovate-oblong, and sinuately-pinnatifid. The flowers are of a bright yellow, and second in size only to those of Œ. missouriensis, being at least 3 inches across, and not seldom more, with inversely heart-shaped petals, a calyx tube about 1½ inches in length, and a cylindrical seed-vessel, which, when mature, is about 2 inches in length, and slightly curved. The seeds are small, and of an ovoid form. Being entirely free from the coarseness of some species, and a most abundant bloomer, it deserves the preference wherever Œnotheras are grown. It is a native of Texas, where it was discovered by Mr. E. Hall, a few years since.

Nuttallia cerasiformis.—Although the time has long gone by when this plant could be called a novelty, it is still very rare in gardens, and its seeds are hardly known in this country. As is pretty well known, the genus Nuttallia belongs to the Natural Order Rosaceæ, the present plant, the only species, being a deciduous shrub, growing 5 or 6 feet or more high, with obovate-oblong leaves, 3 or 4 inches in length, and bearing drooping racemes, of from six to ten whitish flowers, which are followed by a succulent Damson-like fruit, covered with a bloom, and enclosing a nucleus or stone, as in the Plum and Cherry. Some of the plants yield stamens only, in others these organs are absent, but occasionally specimens are found with perfect flowers. It is of neat habit of growth, and though not exactly a showy plant, is well deserving a place in the shrubbery. It is, of course, perfectly hardy. Seeds may be sown in pots or in the open ground, and are pretty certain to vegetate after a longer or shorter interval.

Papaver arenarium.—In this and the following species of Poppy, the fiery red colour which characterises several favourite species of this genus seems to have attained its culminating point, for it is difficult to conceive a deeper and more striking colour than obtains in both. It is further not a little remarkable that, although their foliage is sufficiently distinct, and the capsules still more so, the flowers of these two species are so nearly alike that it is hard to point out any well-defined distinguishing feature. The P. arenarium is an annual plant, growing 1½ to 2 feet high, with oblong lanceolate foliage, bipinnatifidly cut, the segments terminating in a bristle. The flowers are produced singly on naked strigose peduncles, nearly a foot long, each blossom being about 4 inches in diameter, with deep crimson petals, marked with a large oblong black spot, extending from the middle to the base of each petal. Both anthers and filaments, as well as pollen, are of a blackish-purple. The seeds should be sown early, where the plants are intended to bloom, by preference in sandy soil, and the flowers will be produced in June and July. Stronger specimens will probably be obtainable by sowing in autumn.

Papaver umbrosum.—This species closely resembles the preceding, but has the segments of the foliage rather broader, the flowers are somewhat larger, of a slightly deeper shade of sanguineous crimson, and the conspicuous black spot on each petal is more central. The pollen is greenish, and the capsule shorter and broader than in P. arenarium; further, the seeds are nearly twice as large. On the whole, the P. umbrosum is perhaps slightly superior to P. arenarium, in ornamental value, but to the casual observer the difference is scarcely appreciable. Both species are so remarkably showy when in flower as to catch the eye at a considerable distance, and arrest the attention of the most indifferent. They are natives of the Caucasus, and are therefore perfectly hardy in this country.

Pentstemon Clevelandii.—This is described by the collector as a very handsome and showy new species, discovered by the gentleman whose name it bears in southern California, and is said to grow 3 feet high, producing large dark red flowers of a very distinct character.

Pentstemon puniceus.—With the colour of the now well-known P. Torreyi, this interesting novelty combines a much dwarfer habit, and is therefore well suited to small gardens, or beds and borders of limited size. The stems are from 1½ to 2 feet in height, with entire foliage varying from oblong at the base to narrowly lanceolate above, the flowers being bright scarlet, tubular in form, with an ample limb divided into five rounded nearly equal lobes. It is said to be a native of Arizona, and probably also of Utah and Colorado.

Rubus deliciosus.—The traveller in the Rocky Mountains who should reckon on the Rubus deliciosus for his dessert, would have but a Barmacide feast, for, as an edible fruit, it has but small claim to the tantalising specific name given to it by Dr. Torrey, its seed being large, and covered by only a very thin coating of mawkish pulp, vastly inferior to a well-ripened Blackberry. But although this plant so belies its name from the gastronomic point of view, in a horticultural sense it proves to be a very showy, free-flowering shrub when established, producing in June an abundance of large pure white flowers. It forms a branching shrub of erect habit, 4 to 5 feet, or more, in height, with the young growth pubescent, the leaves roundish, and more or less three to five-lobed, the lobes finely toothed, the flowers being produced in a loose cluster of from three to six. It is of rather rapid growth, and succeeds in any good garden soil. Like the seeds of many other shrubs and trees, those of this plant will often remain dormant some months.

Salvia carduacea.—A very distinct species from southern California, flowering the first year from seed, and probably of biennial duration. It grows from 1 to 2 feet high, with stems sparingly branched, and clothed with white wool, the leaves being also more or less woolly, pinnatifid, the lobes sinuately toothed and armed with spines. The flowers are produced in dense, but distant whorls, the calyx being inflated and woolly, and the corolla of a delicate pale purple or lilac colour, with the middle lobe of the lower lip very large and elegantly fringed. The floral leaves and bracts are very spiny. It is probably only half-hardy, but succeeds well in the open border during the summer months. The flowers of this remarkable species may possibly vary to blue, being described as such in some botanical works, but in a specimen raised during the past summer, the flowers were lilac, as already stated.

Aplopappus spinulosus.—This is a neat dwarf composite, of compact bushy habit, growing from 9 to 18 inches high, with several stems from the same root, which are much branched upwards, and amply furnished with small, rigid, pinnate, or bipinnately divided leaves from 1 to 2 inches long; the linear-subulate segments ending in a short bristle-like point. The flower-heads terminate the numerous branchlets, and are about 1 inch across, with about twenty to thirty ray florets, which, as well as the disc, are of a bright yellow. The whole plant is more or less hoary, with a soft woolly pubescence. It blooms from August until the advent of winter, flowering the first season from seed, and succeeds in any soil. As a neat and perfectly hardy border plant, of good habit and of easiest management, it can hardly fail to secure a place in all general collections of hardy perennial plants.

Frasera Parryi.—The genus Frasera, belonging to the Gentian tribe, is scarcely known in British gardens, but includes several interesting hardy plants, all natives of North America. One of these, F. Parryi, now under notice, is a newly discovered Californian species. It is described by the collector as having its radical leaves margined with white, the stems bearing whorled leaves, with an elongated panicle of greenish-white wheel-shaped flowers, prettily speckled with purple dots. The flowers are about 1 inch across, and, from their number, produce a showy effect. Duration of root uncertain, but probably perennial.

Veronica Chamædrys pedunculata.—Who does not know the charming little "weed" which enlivens our hedgerows with its deep blue flowers in early spring, the delight of childhood, and the favourite of every age? The pretty variety of it now under notice differs from the type, in its flowers being of a French white, with blue veins; the foliage is also of a darker green. It blooms abundantly in May and June, and succeeds in almost any soil and situation.

Anemone fulgens.—Although this fine species is a native of the south of France, and has, therefore, been long known to botanists, it has only recently come to the front as a choice garden plant, and till now seed of it has been unattainable. It is so brilliant a species, that it will be welcomed by all classes of horticulturists, and well deserves a place even in the smallest garden. It grows about 9 inches high, producing in April and May from strong tubers, a profusion of dazzling vermilion-scarlet flowers, rather smaller than the common Anemone, with a light coloured ring around the stamens. It is most vigorous and floriferous in rich, loamy, well manured soil, but will succeed in almost any good garden soil. Sow in March and April in pans of light soil, and transplant in early autumn to the open ground.

Celosia pyramidalis.—The value of the Celosia cristata pyramidalis as a decorative plant is now widely recognised, and it is equally well known that, like many others, it varies much when raised from seed, and that some forms of it have been obtained, which greatly surpass the average varieties. That now sold under the name of Reid's Perfection, is one of these, and appears to be a really important acquisition. It is quite robust in habit, attaining a height of 2½ feet, and is furnished to the base with gracefully drooping lateral shoots, which are profusely clothed with plume-like spikes of the purest magenta. If properly managed, the plant will flower continuously for several months together. It is particularly adapted for the decoration of the greenhouse in autumn, and if struck from late cuttings, the flowering season may be prolonged till January.

Clarkia elegans flore pleno.—Double varieties of the Clarkia elegans have long been cultivated, and of late years a considerable improvement has taken place in their character. The varieties raised by Mr. Hardy appear to eclipse all previous forms of this plant, and received the award of two first-class certificates from the Royal Horticultural Society in July last. They are described by the raiser as resembling in substance the best double Balsams, which renders the flowers much more durable in character than the ordinary forms, whilst in form, boldness of habit, richness, and novelty of colour, they surpass all other varieties of elegans yet raised. Two varieties are grown, one named Salmon Queen, with flowers of a salmon-red tint, the other named Purple King, of a deep rosy-purple.

Iberis umbellata hybrida nana.—This seems to be a very promising variety of Candytuft, and is described by the introducers as exceedingly floriferous, and very remarkable for the numerous and brilliant colours which it yields, the varieties including pure white, rose, lilac, carmine, red and dark purple, with intermediate shades. The plants are of dwarfer habit than the ordinary forms, and make handsome tufts.

Kaulfussia amelloides kermesina.—Until now, the Kaulfussia amelloides has yielded but two varieties, differing from itself, viz., the so-called rosea, with a rosy-purple disk, and the ray of a paler shade; and the atroviolacea, with flower-heads of a deep violet. The novelty here noticed is described as having flower-heads of a fine deep carmine, and will be a welcome addition to the list of dwarf hardy border annuals.

Loasa hispida.—The curious structure of the flowers in this genus, and their showy and often well-contrasted colours, would make them popular plants, but for the drawback of the stinging hairs with which most of the species are clothed. L. hispida is, however, so ornamental, that its exclusion from the garden on such slight grounds is not warranted, for, when once planted out, it need not be handled. It grows from 12 to 15 inches high, branching considerably when strong, and bears deeply bipinnatifid foliage of an oblong lanceolate form. The flowers are borne in terminal racemes, of five or six drooping blossoms, which are about 1 inch across, the boat-like petals being of a clear lemon-yellow, and the centre of the flower prettily variegated with green and white. The plant blooms in August and September, for some weeks in succession, and is of easy management as a half-hardy annual, in any light fertile soil. A native of Brazil, and may probably be synonymous with L. ambrosiæfolia.

Oxalis rosea alba.—This is a pure white variety of the well-known Oxalis rosea, one of the most popular of half-hardy annuals, and affords a pretty contrast to it. It appears to come perfectly true from seed, and may be recommended as a very desirable little plant, suitable, like the type from which it has originated, for edgings, as well as for pot culture.

Passiflora pectinifera.—Of the annual Passion-flowers, of which the number is somewhat restricted, but one, the P. gracilis, is at all common in gardens, and, though not a showy species, it may be recommended for occasional cultivation as a half-hardy climber. In the P. pectinifera, a far more remarkable annual species, is presented to the notice of the amateur. It is described as being the finest of its class. The foliage is three-lobed, with a cordate base, and of a velvety-green colour. The flowers are of a carmine-rose colour, upon a pure white ground, and are surrounded by an involucrum of three deeply pectinated leaflets, each division of which is terminated by a gland. Being a native of Brazil, it probably requires to be grown under glass, or upon a warm wall, in which situation its growth is said to be very rapid.

Zinnia Darwinii.—Under this name, an interesting hybrid variety has been obtained by a German firm, which is said to have originated from a cross between the double Zinnia elegans and the double form of Z. Haageana. They are described as combining a regular branched habit of growth, the utmost variety in colours, with perfect doubleness of flower up to the last stage of blooming. The plants thus obtained differ somewhat in habit and height, as well as in the form of the flower-heads, which are globular in one variety and conical in another. The colours of the mixture sold are said to include white, yellowish-white, white tinted rose, yellow, sulphur, golden-yellow, salmon-rose, lilac, deep crimson, deep violet, deep purple, deep scarlet. The variety vittata comprises six colours, viz., white red-striped, white rose-striped, white crimson-striped, sulphur crimson-striped, yellow scarlet-striped, and sulphur purple-striped.

Silene saponaria.—This is described as a magnificent border plant, forming fine tufts 8 inches high, covered with large bright rose-coloured flowers, with deeply cut petals. For masses, as well as for pot culture, it is very effective and pretty, and is altogether a first-class novelty.

Phlox Drummondi grandiflora splendens.—The new large-flowered varieties of Phlox Drummondi prove to be decided acquisitions, and the variety above named especially merits recommendation, it being the finest of the grandiflora section yet introduced. Its flowers are very large, of great substance, of a vivid crimson colour, with a pure white centre, and the habit of the plant is free and robust. It will doubtless prove a splendid bedding plant. The varieties, kermesina alba oculata and violacea oculata alba, are but little inferior to it.

Salvia sanguinea grandiflora.—This species is represented as similar to S. coccinea, but produces flowers twice as long. It forms a large bush of shrubby habit, growing 3 to 4 feet high, all the shoots being terminated by long spikes of scarlet flowers furnished with white and lilac bracts. It is hardy in the south of France, and well suited for masses. Said to be a native of North America, but is doubtless a Mexican plant. W. Thompson.

Ipswich.

Renovating Patchy Lawns.—Lawns sometimes become patchy, especially those subjected to much treading. Under such circumstances, where the roots of the Grass are not wholly destroyed, a slight surface dressing with rich soil early in the spring will induce a luxuriant growth throughout the summer, except in the case of light and shallow soils, where the roots are growing thinly. With these, the best plan is to cut out the small spent patches, and replace them with fresh healthy turf. This should be done not later than March, in order that new turf may be established before scorching weather sets in. Grass seeds do very well when sown in out-of-the-way places; but on parts where there is much traffic they get trodden down and often killed before they have time to form a good turf.—J. Muir.

Cypripedium Passerianum.—Can you tell me if this Lady's-slipper is in cultivation in England, as I fail to find it mentioned in any of the catalogues which I have. This magnificent plant grows freely in moist, sheltered spots in the Sierra Nevada of California, near the Yosemite Valley; and I found several specimens in full flower on the 28th of May, 1874, between Clark's Ranch and the Mariposa Grove of Sequoia (Wellingtonia) gigantea. Its leaves are ovate, sessile and amplexicaul, and from 2 to 3 inches long. The stem is erect, and from 8 to 12 inches in height. The flowers are from one to three in number, the sepals and petals being of a rich, chocolate colour, and the lip pure white. As I found this Cypripedium growing by the side of Lilium Washingtonianum, I feel sure that it could be easily cultivated in England; and it would be an interesting addition to any collection of Orchids.—Rose G. Kingsley, *Byfleet.* [C. Passerianum does not appear to be in cultivation under that name; indeed, many consider it to be only an American form of our native C. Calceolus. The plant is described and figured in Hooker's "Flora of North America," t. 206, and is one of Richardson's species synonymous with his C. parviflorum, described in "Franklin," Appendix i., 320. We have a whole group of so-called species, all very closely related, the main distinction being geographical distribution; among these are C. Calceolus, C. pubescens, C. parviflorum, C. Passerianum, and C. cordigerum. The last-named, according to Lindley, is but a white-flowered form of C. Calceolus, a widely distributed plant found in Europe, Dahuria, and, according to Thunberg, a native of Japan.—B.]

Dark-leaved Cannas.—Do dark-foliaged Cannas keep their colour when planted in the open air; and what are the names of some of the best dark-leaved kinds?—W. J. M. [Dark-foliaged Cannas keep their colour when planted in the open air; but they do not stand the winter so well as the green kinds. The following twelve are the very best, both as regards their rich dark tints and free-flowering properties, viz.:—Barilletii, Bihoreli, Bonnetti major, discolor violacea, expansa, Jerrandii (this will bloom all through the winter in a warm greenhouse), Maréchal Vaillant, metallica, nigricans, Rendatleri, violacea superba, and Warscewiczi zebrina.—R. Cole.]

THE ONION-FLY.

(ANTHOMYIA CEPARUM.)

THE Onion-fly was unusually destructive last season; and, in some parts of the country, as in Lancashire and Derbyshire, for instance, it has nearly wholly ruined the crop. There is, however, no evil without its countervailing good, and one good, though it may be very dearly bought, is that we are likely to know the details of the life of the destroying insect a little more accurately than we previously did, besides getting any blanks in its history filled up. One of the cultivators who has suffered from its ravages (Mr. J. Knowles, of Blackburn), has paid particular attention to it, and he has favoured us with some memoranda relating to it, which may be of interest to the Onion grower, the more that they relate to the depositing of the egg, which, we need scarcely say, is the most important point in all efforts to counteract insect damage, and that to which our attention ought to be mainly directed. After the egg has been deposited it is usually too late to interfere with effect. The mischief has been, if not already done, at least already promised, and promises for evil are a kind of promises that are generally only too well kept. It has usually been said that the eggs of the Onion-fly were deposited upon the leaves of the Onion, close to the surface of the ground, and that the grubs penetrated through the outer leaf, making their way down to the base of the bulbs between the leaves; but, from the observations of Mr. Knowles, it appears that this is not quite the course of proceeding. His observation is that the eggs are deposited on the joints of the leaves (as at *aa* in fig. 1) in small clusters from two to seven in number, probably at night or in the early morning. They are oblong, white and waxy in colour, and from one-tenth to one-eighth of an inch in length. On being touched these eggs seemed to him to give a little spring off the plant towards the root of the Onion. These were probably eggs ready to hatch. We do not see otherwise why the eggs should not at once have been laid in or on the ground. By being glued to the leaves they were kept free from damp and creeping enemies, and it would only be at the termination of the period which it was for their good that they should remain there, that means were provided for allowing the eggs or larvæ to get to the next position for which they were destined. It seems most likely, therefore, that the embryo in the eggs that become thus displaced must have reached such a stage of development that it would feel a touch through the egg-shell, and make a wriggle in consequence, which might start the now somewhat worn glue that binds it to the leaf and allow it to fall. On this head we ask for fresh information from Mr. Knowles in another season. After they have fallen, whether in the shape of eggs or larvæ, he found that they invariably made their way to the root, but by a quite different route from that usually supposed. Instead of entering at the top of the root they make their way to its bottom (as shown in the cut at *b*), and eat their way into the bulb from the outside, at or near the base. We have no doubt that this is a correct explanation of the place and mode in which entrance is effected. It is exactly at this place, and in this way, that the Merodon clavipes, which we lately noticed (see p. 363, Vol. VIII.), makes its entrance into the bulb of the Narcissus. Their gnawing there soon stops the growth of the bulb, and causes an offensive smell, the bulb decaying and putrifying, partly owing to the slimy matter secreted by the grubs, and partly from natural decay. June and July are the months in which they are most numerous, but they have been found as early as May, and sometimes a very late brood may be met with even in winter, there being a constant succession of maggots, owing to the number of generations produced in the summer. The larvæ are broad at one end and pointed at the other, as shown in fig. 2. They are undistinguishable from those of the Turnip and Cabbage flies, and from many other species of Anthomyiæ. They are said to attain their full size in fourteen days, when they leave the Onion and descend into the ground to undergo their metamorphoses. They there assume the chrysalis or pupa stage; their hardened skin turning into elliptical chestnut-coloured cases, in which they pass from ten to twenty days in summer before the fly is perfect, and then it comes out; the autumnal pupæ continue in that state through the winter. The fly produced by them appears in April or May. The perfect male insect is of an ash colour, roughish, with black bristles and hairs, and the eyes are contiguous and reddish, the face silvery white, antennæ black; there are three obscure lines down the thorax, and a line of long blackish spots down the centre, more or less visible in different lights; the wings are transparent, slightly iridescent tinged with ochre at the base, the nervures, pale brown; poisers, ochreous; legs, ashy brown. The female is ochreous or ashy grey, clothed with black bristles and hairs; the eyes are reddish and remote, with a light Chestnut stripe between them, bifid and darkest at the base; face, yellowish-white. (See fig. 2.) Many remedies have been suggested and tried with various success. Curtis mentions the following, viz.:—Dressing the beds with nitrate of soda, covering them with a layer of half-an-inch of charcoal, mixing it with the earth before the seed is sown; spreading or sprinkling with coal-dust, lime, soot, salt, or watering them with a strong decoction of worm-wood, soap-suds, &c. These do not seem to have done much good. Mr. Knowles has tried most of them without effect. Rolling where the soil is light has been recommended; such a soil seems to be more favourable to the development of the fly than that of a stiff clayey nature, through which it is more difficult for the mature insect to make its escape on emerging from the pupa; and that many must perish in soil of this description is obvious from the fact that numbers of pupa have been found imbedded in the clay several inches underground, from which it would have undoubtedly been impossible for the fly to get out under ordinary circumstances. Curtis speaks of pulling up the affected

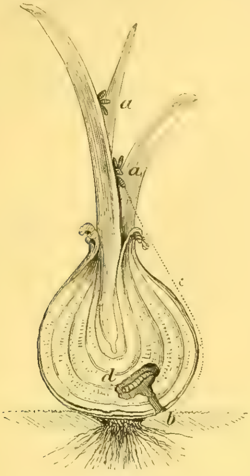


Fig. 1.—Section of Onion, showing the position of the eggs and direction in which the larva enters the bulb.

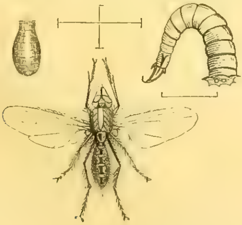


Fig. 2.—Onion-fly. Larva, chrysalis, and perfect fly; all magnified.

bulbs, whose state is first shown by the yellow drooping leaves, and destroying them at once, to prevent further damage, as one of the most effectual cures, as it is hopeless to think of saving the Onion when the grub has established itself in it; but the above explanation of the laying of the eggs and the mode in which the larvæ get into the bulb show how fruitless any such plan must be. It might, indeed, be of use if the larvæ came out of one bulb and wandered into another, but there is no reason to think that they do so; on the cȏntrary, everything seems to indicate that the grubs pass their larval life in the bulb into which they first enter, and only leave it when about to enter into the pupa stage. The course that we would recommend is, for the cultivator, at the time when the fly appears in April or May, to keep a very sharp look out and to destroy the first brood, which is his only chance. Let him crush the enemy, so to speak, in the egg. Let him pass his hands gently over the leaves at the points we have indicated in the annexed figure, and if he finds any eggs let him remove them then or crush them gently by hand. If he watches at the right time it is only a week or ten days' daily examination. It is, perhaps, impossible so to watch on very large crops, although even then, where it has once been found that the eggs are being laid, we think it would be money well laid out to employ many female hands to go gently over the leaves and draw off or squeeze the eggs.

Andrew Murray.

TREES AND SHRUBS.

VARIETIES OF BOX.

The different varieties of Box are all evergreen shrubs or small trees, and highly valued, not only for their ornamental appearance, but for their timber. The following are the most distinct and worthy of attention:

The Common Box (Buxus sempervirens).—This species is not only indigenous to England, but to a wide range in southern Europe and Asia Minor. It forms a densely branched shrub or tree rarely exceeding in this country 20 feet in height, but found frequently on the Continent rising to above 30 feet. The wood is much superior in quality to that of any of the other species, and is of great importance, from the fact that it is the best that has yet been discovered, for wood engravers' blocks, for which it is in great demand. The home supply of this valuable timber is now very meagre, and to meet the large and ever-increasing demand, great quantities are imported from the more accessible of its forign habitats; even these, however, are reported as being nearly exhausted, and there is reason to believe that it will soon become a scarce and very expensive commodity. The general appearance of this shrub, with its symmetrical habit of growth and bright shiny green ovate leaves, is so familiar to even the most careless observer of the productions of the vegetable kingdom as to render description superfluous. The flowers like those of all the other species, are very small, of a light or yellowish-green colour, generally profuse, and in perfection in April or May. It is here very little planted for its timber alone; but no evergreen is more frequently met with in our shrubberies and pleasure grounds, where, if in anything like favourable circumstances in regard to soil and situation, and with plenty of space on every side to develop its branches, it forms a remarkably handsome, though somewhat slow-growing specimen. From its naturally close, bushy habit and short twiggy branches, the common Box is one of the most useful evergreens for garden hedges. It may be pruned or clipped into any shape with the greatest impunity; and in the days when topiary gardening was in fashion, it shared with the Yew the place of honour in the formation of architectural designs and figures of men and animals, the outlines appearing as sharp as if they had been carved out of a solid substance. In common with all the other species, this plant succeeds well in shady aspects, and makes excellent shelter for game when massed as underwood among old trees. While there are few soils in which this shrub will not grow and even thrive, it prefers such as are of a light porous character, with a warm, gravelly, or sandy sub-soil; and when planted in stiff clay, ample provision should always be made for the drainage of superfluous moisture. Of what is regarded as the typical species, there are a remarkably large number of varieties in cultivation, differing more or less in stature, habits of growth, and foliation. They are all very interesting, and in not a few cases quite equal, if not superior, to the parent as decorative shrubs. Of these the undermentioned are worthy of special attention:

B. s. arborescens.—This is a very handsome form, with a more robust habit of growth, longer branches, and larger, lighter green leaves than the species with which it is found associated both in its English and foreign habitats. It is one of the most desirable and popular of the varieties.

B. s. arborescens aurea marginata differs only from the preceding in having its leaves narrowly margined with bright gold.

B. s. arborescens Handsworthensis.—This grand form originated at, or at least was sent out from, the Handsworth Nurseries, near Sheffield, a few years ago. It has a broad, bushy habit of growth, with broad, deep green leaves, and is one of the finest and most distinct of the varieties.

B. s. arborescens Handsworthensis aurea marginata has its leaves prominently margined with gold. It is a most effective plant.

B. s. angustifolia, with much narrower leaves and a dwarfer habit of growth than the species, is a pretty compact little shrub, valuable as a margin to the stronger-growing, or for small borders or beds of diminutive evergreens.

B. s. angustifolia aurea differs from the preceding in its leaves being tipped or margined with gold.

B. s. argentea variegata.—This variety has its leaves freely variegated with silver, and, having a neat bushy habit of growth, is a great favourite with planters of choice shrubs.

B. s. aurea marginata.—The leaves of this sort are beautifully tipped and margined with gold, giving it a fine effect, and rendering it very valuable for grouping with the other forms for winter effect.

B. s. japonica.—By some writers regarded as a species, but so closely resembling the common Box as to justify the opinion of others that it is merely a form of that species. It is quite hardy here, and forms a very distinct and handsome shrub. The habit of growth is similar to that of the species, but the leaves are nearly double the size, and of a darker green colour. It was sent home a few years ago from the Continent, and was said to be originally from Japanese gardens.

B. s. japonica aurea variegata.—This grand acquisition has its leaves beautifully blotched with bright gold, and is one of the best of our hardy variegated evergreens, producing a most striking contrast in the mixed shrubbery border, and peculiarly valuable for winter-bedding in the flower garden, for which purpose it is well worth the attention of gardeners, who are often at a loss to find plants of neat growth, effective foliage, and at the same time sufficiently hardy to retain their beauty and freshness during the winter and spring months.

B. s. latifolia has larger and broader leaves than the species, which it otherwise very much resembles.

B. s. latifolia stricta has foliage similar to the preceding, but differs in its style of growth, which is more compact and columnar.

B. s. pendula.—This variety has a decidedly weeping habit of growth, and when left to itself has a rambling, not very elegant, appearance. Trained, however, to a single stem, or grafted as a standard upon the upright varieties, it forms an exceedingly fine specimen, well suited for a lawn, or prominent position in the flower garden or shrubbery. It deserves to be much more frequently planted.

B. s. rosmarinifolia.—A curious dwarf-growing variety, with narrow leaves of a deep-green colour, giving the plant an appearance suggestive of a miniature Rosemary.

B. s. suffruticosa or nana.—This is the common dwarf Box, a plant unexcelled for edgings to garden walks, and too well known to need description.

B. s. myrtifolia.—A distinct and pretty dwarf-growing plant, with narrow oblong leaves.

B. s. thymifolia.—An exceedingly neat-growing dwarf variety, with short tiny branches, and very small narrow leaves. It is an admirable rockery plant, and useful for the winter adornment of flower-garden beds.

B. s. thymifolia aurea variegata.—This differs only from the last in its leaves being prettily variegated with light yellow.

The Minorca Box (B. balearica).—Indigenous to the Balearic and other islands in the Mediterranean, as well as to Italy and Turkey, where it forms a magnificent tree of from 60 to 80 feet in height. It was first introduced into Britain in 1780. The leaves are similar in form, but nearly four times as large as those of the common Box, and when grown exposed to the sun, of a much lighter green. They are thick and leathery in texture, and very abundantly set on the branches. The flowers are small and inconspicuous, of a light yellow colour, and generally expand in July. In our gardens it is only seen as a moderate-sized shrub; and, though very properly classed among hardy evergreens, it only succeeds well in the milder districts or in well-sheltered situations. Its habit of making late autumn growths renders it peculiarly susceptible of injury from frost, by which the points, and sometimes the whole of the young shoots, are destroyed. It is, notwithstanding, such a distinct and handsome species, that it should have a fair trial wherever a favourable situation is at command. As it thrives well in the shade, it is found useful for clothing walls or other buildings with aspects in which, from want of sun, few other evergreens or flowering shrubs would succeed. It requires a dry porous soil and a warm sub-soil.

The Chinese Box (B. sinensis).—This species was first sent home from China in 1802. It is of a dwarf habit of growth, rarely exceeding in its native habitats 3 feet in height. The leaves are smaller in size than those of the common Box, broadly ovate in form, and of a light green colour. It is here rather tender, but succeeds tolerably well in sheltered situations, forming a neat, round, very compact bush, useful for small garden beds, where plants of slow growth and regular outline are frequently desirable.

B. s. longifolia.—This form is of recent introduction from China. It has a similar habit of growth to the species, but has much longer leaves. Though like its parent, scarcely equal to our winters, except in well-sheltered situations, it is a pretty little plant, and well worthy of a snug corner among choice shrubs.—"The Gardener."

Best Time for Moving Rhododendrons.—Can one safely transplant Rhododendrons at this time of the year into not particularly good soil? Which are the hardiest and best kinds for so doing, and how late on towards spring can one transplant them with any prospect of success? If Rhododendrons cannot bear moving now, what evergreen shrubs would stand transplanting at this season? The spaces required to be filled up are in rather exposed situations, the soil being, as already mentioned, poor. The locality is not far from coal fields in Pembrokeshire.—WHITE PRIMROSE. [There cannot be a better time than the present for transplanting Rhododendrons—*i.e.*, as soon as the frosty weather has disappeared; they may also be moved with perfect safety up to next May. The most hardy kinds are hybrids from Catawbiense.—JOHN WATERER, *Bagshot.*]

Variegated Conifers.—With this I send you specimens of Pinus sylvestris aurea, Pinus austriaca variegata, and Pinus Pinaster variegata. The first is a true golden variety of Scotch Fir, one which grows as freely as the normal form, and one which in winter assumes a handsome golden colour. The variegation in the case of P. austriaca is also very striking and is one which contrasts well with the dark foliage of other Pines. The Pinaster variegata is, perhaps, the finest variegated Conifer known, but unfortunately it is most difficult to propagate. Besides these we have the golden American Arbor-vitæ and the yellow Lawson Cypress, so that we have sufficient finely-coloured Conifers to produce as fine an effect in winter, as the Golden Poplar and Golden Laburnum produce in summer. Fine winter effects may also be obtained by planting Acer rubrum, Cornus coccinea, golden Willows, and that most beautiful plant Cryptomeria elegans.—W. W. JOHNSTONE, *Lawson Company's Nursery, Bangholm, Edinburgh.*

Desfontainea spinosa in Ireland.—This, says a correspondent of the "Gardeners' Record," is the most distinct and beautiful hardy evergreen shrub in cultivation. Perhaps I ought to qualify the word hardy, as, from personal experience, I can only assert its hardiness as far as the province of Munster is concerned. At Messrs. Saunders' nursery, Cork, numerous plants of it may be seen growing in the open quarters, and at Belgrove, near Queenstown, it appears to be quite at home; and the same may be said of it at Creg, near Fermoy, where, under the care of Mr. C. Percival, it blooms as freely as a hardy Azalea.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Deodar as a Vase Plant.—Deodars look well in vases connected with outside stairs and balconies. In such positions their pale green pendent branches have a graceful effect. The Deodar withstands all kinds of exposure, even about towns. If planted when in a small state, in good loam, it will last a long time even with its roots confined in a vase.—J. MUIR.

A New Laurel.—Everybody knows the common Laurel (Cerasus Laurocerasus), but comparatively few are acquainted with the new Camellia or volute-leaved variety, which is so distinct from all the forms of the common and Colchic Laurels that it well deserves attention. Its growth in Messrs. Lee's nursery, at Feltham, is robust and erect, the leaves, which are glossy and rugose, being each curved, as in the new Croton volutum.

The Hungarian Oak (Quercus conferta).—A tree of this handsome deciduous Oak may be seen in the Royal Botanical Gardens, Edinburgh, where it is called Q. pannonica. It was procured from Messrs. Lawson's Nursery twenty years ago, and was removed to its present situation in 1865, where it was planted by Sir William Gibson Craig. It is 20 feet high, 36 feet in spread of the branches, and 28 inches in circumference of stem. Its foliage is very beautiful, nearly 7 inches in length, and 3 or 4 inches in breadth, and almost sessile. This species is a native of Turkey in Europe, where it forms large forests. The Acorns are sweet to the taste, and are eaten by the Servians.

THE INDOOR GARDEN.

FORCING IRISES, CROCI, AND OTHER BULBS.

MR. ALLAN's hints (see p. 27), on the forcing of Iris reticulata, should be noted by all who want a really charming flower in winter. I object strongly to forcing hardy plants, but there are just a few which flower at such early and usually inclement seasons that the beauty of their flowers is either partly or entirely destroyed if they are left without any shelter. Among them I should place Iris, or, more properly Xiphion reticulata, X. Histrio, and several of the autumn and winter Croci. Many of these latter have been struggling with the cold and dull weather for a month past, and though the flowers are fully developed they have been unable to open though protected by a frame. If kept plunged until the buds appear, and then moved into a greenhouse, they open freely, and can be returned to their usual quarters when the flowers are over. All small bulbs, however, if kept in pots unplunged, whether indoors or out, suffer very much from the changes in temperature and moisture to which their roots are subject. I have found that the best way to enjoy the beauty of Calochorti is to grow them in pots plunged in a frame and brought into the house to flower. They are thus protected from slugs and wet, and can be dried off more gradually and thoroughly than if planted out altogether. I believe that Calochorti, like most other bulbs coming from a country where the summers are hot and dry, cannot be grown successfully in this climate, unless artificially rested in autumn, though when divested of the thick fibrous coats which cover the bulbs in their own country, they must not be allowed to lose any of their plumpness by over-drying. Another reason for resting all similar plants as long as possible is, that they are kept from growing at a season when they are liable to injury from spring frosts. I hope that those who have friends in the Rocky Mountains will try and procure several species of this lovely genus, which are still unknown in Europe. Besides the eleven or twelve species now in cultivation, eight of which I flowered last season, there are at least ten more, of which C. Lyalli, C. nitidus and C. apiculatus are found in British Columbia; C. Nuttalli and C. flexuosus in Utah and other states; C. Hartwegi and C. purpurens in northern Mexico.

H. J. ELWES.

Bougainvillea spectabilis.—How can I induce this Bougainvillea to produce its mauve-coloured bracts? We have a plant here eighteen months old, which is about 7 feet high, and well furnished with side shoots, but they are not very strong. It is in a 14-inch pot, and trained to the back wall of a rather cool stove. It has had little or no water for the last six weeks, but still it is quite green and growing a little. I may add that the pot in which it is growing is plunged to the rim in a border of soil. When may I expect it to produce its finely-coloured bracts?—THOS. SPELMAN.

Painting Glasshouses.—I have for many years used anti-corrosion paint for all outside work, and, on the whole, I prefer it to white lead. I think it wears better in exposed places, and consequently keeps the wood in a better state of preservation. Formerly I applied two coats every two, or, in some rare instances, three years; now I give one coat every year, and I believe this plan is at least as cheap as to give two coats at longer intervals, as I find that I have now very little loose putty to re-place, which used formerly to add a good deal to the expense of painting. I know some painters have a prejudice against the anti-corrosion paint, and, from its being composed largely of ground glass, it has a tendency to wear out the brushes used in applying it; but, brushes are comparatively cheap; at least they form but a small item in comparison with labour and paint.—H.

Tuberose Culture.—We have had several allusions in THE GARDEN to the good Tuberoses in cultivation in America. The following throws some light on their culture:—"It is well known that to bring Tuberose bulbs to perfection a long and rather hot season is required. In the more northern states of America the summer is scarcely long enough to mature the small offsets planted for the purpose of producing blooming bulbs; and, even in localities where they do come near enough to enable the propagator to keep them over without delay, it requires two or three seasons to produce a large blooming bulb from the small offsets with which we usually commence as a starting point. Then again, the bulbs grown in a cool climate are seldom as firm and solid or bloom as freely as those from a warm one; hence the oft-repeated announcement in florists' catalogues of 'genuine imported Italian Tuberoses.' Tuberoses of excellent quality are, however, produced in New Jersey and throughout the middle states; but even in those states it generally requires two years to produce blooming bulbs."

PLATE IV.

THE GREAT ARAUCARIA AT DROPMORE.

The plate issued with the present number of The Garden does not represent a new flower or valuable fruit, but what is perhaps the finest specimen in England of the most distinct of all our introduced hardy trees—the great Araucaria at Dropmore, near Maidenhead. In testing the fitness of the process we employ for the representation of landscape and tree sketches as distinguished from portraits of flowers and fruits, we selected Mr. Vernon Heath's portrait of this grand tree, which, even in the grounds at Dropmore, where there is such abundant wealth of Coniferous trees, is one of the most interesting. It is about 60 feet in height, and well furnished with branches from bottom to top. It is about forty-five years of age, and when first planted was only 2½ feet in height. In southern Chili this Pine grows to the height of 150 feet; but, although introduced as far back as 1795, we believe the highest tree in this country is that which we now figure. Mr. Barron, writes thus respecting this tree:—"I cannot do better than state what has been done with this Araucaria at Elvaston. In November, 1836, I planted one, 3 feet 9 inches high, in the grounds at that place. This plant I lifted myself in the late Mr. Donald's nursery, at Woking. It was at that time the specimen tree in his nursery arboretum. I had to pay 6 guineas for it, besides replacing it with another worth 50s. I was at that time fully aware of the evils of pot-bound trees; but I knew that it had stood too long to run the risk of uncoiling its roots; therefore I planted it with a good ball of earth undisturbed, and for fifteen years consecutively it made an average growth of 20½ inches; and during three years of the most rapid growths it averaged 2 feet 2½ inches, and made three whorls of branches in two years. This tree was planted in a good depth (3 feet) of silicious loam well drained, and had each year a liberal supply of water during the growing season. In the winter of 1838 the thermometer fell 8° below zero, yet none of our Araucarias were injured. This fine tree was the admiration of all who saw it, until it was over 33 feet in height, then it stopped growing; and I purposed removing it to some place in the plantations, on one of my transplanting machines. I then discovered the true cause why it ceased to grow, viz., there were only two roots alive, all the others were strangled, and many of the earlier strangled ones were rotten; the whole of this mischief arose from the plant having been pot-bound when young. This tree, which grew in a most conspicuous place, in front of Elvaston Castle, was immediately replaced with another fine plant, which is now a noble specimen. Naturally, the Araucaria is generally found growing luxuriantly on soils with a rocky substratum, where its roots are kept moist by rain and falls of snow. It grows on the western declivities of the Andes, and even reaches the snow-line. It will grow in any soil where the forest trees will flourish. It is easy of removal at any age or size, as its roots are flexible, and furnished with abundance of fibres. With many amateurs there exist strong prejudices unfavourable to the introduction of this noble tree; two I may mention, which are founded on a want of experience of the true habit and constitution of the Araucaria. 1. I have repeatedly heard the remark, 'I do not like that plant.' 'Why?' 'It looks so stiff and formal.' No doubt the remark is just when applied to a young specimen; but the adult tree, when well grown, combines both dignity and gracefulness in a high degree. 2. Since the morning of Christmas, 1860, when so many fine plants were destroyed by frost, many have an idea that this tree is not hardy enough for this country; but that is a mistake. The most trying frosts which we have had during the last fifty years occurred in the winter of 1829-30, March 20th, 1837, January 28th, 1838, and January 20th, 1854; in this case the thermometer was 8° below zero, with a perfect hurricane from the N.E., so that all our Deodars were leafless as Larches in the spring, and the temperature on vegetation might be said to equal 15° below zero; yet our Araucarias were untouched. The true cause of the destruction of Araucarias on December 25th, 1860, was the high-growing temperature up to within a week of Christmas, when large Oaks, Hollies, and Ash trees succumbed, which had not been injured for 200 years before. The thermometer stood at 80°, Farenheit, out-of-doors in October, 1860." A fine specimen of this Araucaria growing at Woodstock, Kilkenny, of which we gave a woodcut illustration in The Garden (see p. 399, Vol. III.), has reached a height of upwards of 50 feet; and, in England, trees of it, varying between that and 60 feet, are not uncommon.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Propagating Bedding Plants.—Some of these should now be prepared for propagation, as many of them do better when struck in spring than when used in the form of autumn-struck plants. Verbenas, for instance, propagated in autumn generally get hard and stunted during winter, and do not grow away when planted out nearly so freely as the softer spring-rooted plants. To ensure their rooting freely, store-plants that were prepared early in autumn should be placed at once in a little warmth; a night temperature of 50° will be sufficient; but a few degrees more will do no harm, provided the plants are placed on a shelf, or in any other position where they will be near the light. Whilst there, keep them well supplied with water. Liquid manure once a week will be of great benefit to them, and will enable them to produce more cuttings than if no stimulant is used. Verbenas, particularly the white varieties, are very subject to mildew; and, as soon as this is detected, dust at once such as are affected with sulphur. Lobelias of the speciosa type and Heliotropes should also be placed in warmth; for, unless the shoots to be taken off are young and soft, they will not root freely. Ageratums require to be treated in the same way; the compact-growing dwarf varieties, such as Tom Thumb or Imperial Dwarf are the best kinds, as their close habit renders them more desirable than the taller sorts. Where Ageratums have to be raised from seed, it should be sown at once in well-drained shallow pans in sifted loam and leaf mould, in equal parts; to which add a little sand, filling the pans up to within an inch of the rims. Press the surface quite smooth, and sow the seed moderately thick, covering slightly with a little finely-sifted soil. Place the pans in a temperature of 50° or 55°, and as soon as the plants make their appearance. Keep them near the light to prevent "drawing;" where, however, there is at command a sufficient number of Ageratums and Lobelias from which to take cuttings it is better than raising them from seed, as, in that way, they cannot be depended upon to come true, Ageratums, in that case, often coming too tall, and the Lobelias deficient in colour. The yellow Pyrethrum is much better raised from seeds than from cuttings or division of the roots. If seeds are sown now and put in a little warmth they will be up in a short time, when they can be either placed in small pots or in boxes. Pelargonium cuttings, struck several together in 5 or 6-inch pots, should be kept where they will make a little growth and not be too much crowded, or they will become "drawn;" it is better not to pot them off singly yet, unless they can be placed for some time in a temperature of 45°, in order to induce the production of roots. Roots of Dahlias and Salvia patens should be looked over in order to see how they are keeping; they should be placed where no frost can reach them, but not where the tubers will shrivel much. If the old stems of Dahlias have not dried well, but, on the contrary, are wet and mouldy, the roots should be removed for a short time to a place where they will be less subject to damp, or the eyes at the collar will most likely perish; they must not, however, be put where there is warmth sufficient to start them into growth. Cuttings of Chrysanthemums should now be put in; for, if they are not struck until spring, they do not flower so well unless they are very attentively treated through the summer. In selecting the kinds to grow it is well to consider whether they will be required early or late. By means of a judicious selection of sorts a succession may be had, if desired, from October to the end of the year, the latest-flowering varieties being generally the most useful. The cuttings should be put three or four together, in a small pot, in ordinary loam, to which has been added one-third leaf mould and a sixth part of sand; they will root in a greenhouse temperature covered with bell or hand-glasses kept sufficiently close to prevent flagging, but not so as to cause the leaves to damp off; the soil should be kept quite moist, and the pots ought to stand on soil, sand, or some other moisture-holding medium, and not on dry shelves. If they can be placed in a temperature of 50° they will root all the quicker.

Hedge-cutting.—The growth of a hedge is much influenced by the shape to which it is cut; nevertheless, this is a point which seems to receive less consideration than it deserves, even from those who ought to be acquainted with the effects of yearly confining growth within certain limits. Observe, for instance, the size to which uncut plants will grow, compared with such as are regularly trimmed in, and the same holds good with respect to any particular

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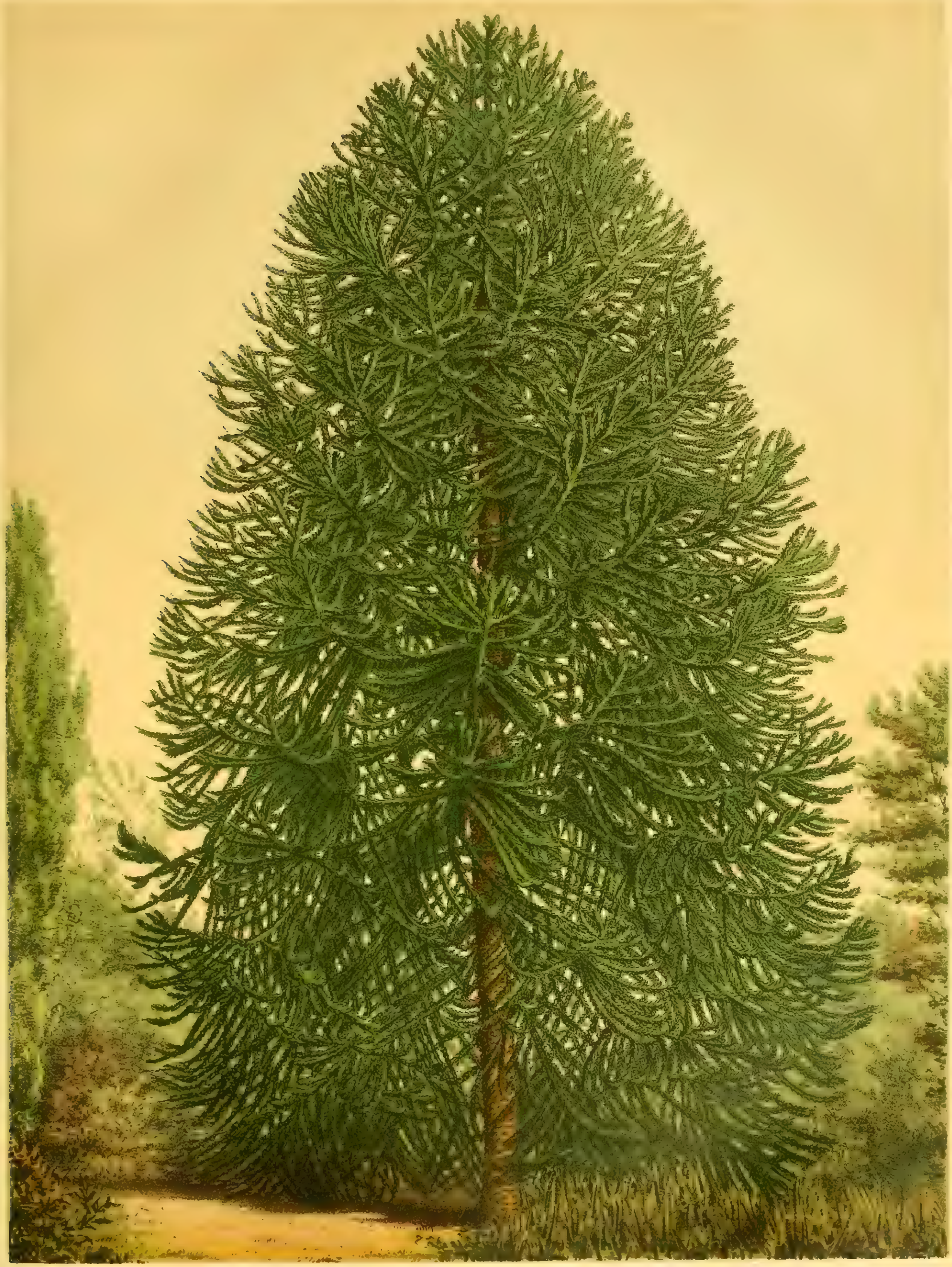


THE GREAT ARAUCARIA AT DROPMORE (60 FT HIGH)

branch or branches upon a given plant that are left to grow to a larger size than the rest. In all cases it will be found that the branches, from whatever part of the plant they may be produced—base or top—will be proportionate in strength with the extent to which they have been allowed to grow; hence it follows that, in cutting a hedge, the wider it is left at the bottom, by permitting the lower branches to extend, and by keeping the top ones cut in close up to a point, the stronger the growth at the bottom, where it is most wanted to be, and this will proportionately check the natural tendency in the top branches to out-grow and leave those near the base weak. The too general practice in cutting garden hedges is just the reverse of this, for they are often left to grow to a considerable height; the sides are then cut perpendicularly, and the top flat. Than this it would be difficult to imagine a worse shape to which a hedge could be cut, as it tends to encourage strength in the top and weakness at the bottom. Hedges are usually better managed in the north than in the south; but, even where best managed, utility is often partially sacrificed to appearance by not allowing enough breadth at the bottom. The best and most impervious hedges I ever saw have been composed of Thorn or Holly, 6 feet through at the bottom, and 5 feet in height. The sides of these, which were slightly rounded, ran up to a sharp point at the top. Thus managed, the bottom branches become strong right down to the ground, and so close as to be proof against even poultry. Hedges that have been mismanaged by letting them assume a shape incompatible with the object for which they have been planted, should at once be cut into the required form, using a saw for the strongest branches, and a sharp hook for the weaker wood. When using the latter tool, always cut upwards in a slanting direction, so as to make a clean cut, and do not leave the branches when severed in a jagged split state—a condition that will inevitably occur, if the wood is cut downwards; the superiority of upward cutting will be apparent in the much stronger growth that will be made; hedges that have been allowed to grow to a height of 10 or 12 feet, and which have got naked in the bottom, can thus, by judicious management, be brought into good form. All hedges composed of deciduous plants, such as Thorn or Beech, ought to be operated on immediately. Where Holly, Yew, Laurel, or any other evergreen plants are used, whatever cutting is required, either in the shape of annual trimming, or considerably reducing their size, had better be deferred until the end of March or beginning of April. Young Thorn hedges, that were planted a year ago, should now be cut right down to within 6 inches of the ground, and kept during the summer thoroughly clear from weeds. If the ground has not been well prepared previous to planting, 2 or 3 inches of rotten manure should be "pointed" into it, a couple of feet in width from the collar of the plants at each side, and if tan can be readily obtained, 2 inches spread over the surface will effectually keep down all annual weeds, as well as promote growth by acting as a mulching during dry weather. Hedges that have been planted two or three years should each winter be cut well back to within 9 or 10 inches of the point to which the shoots were shortened the season previous; if allowed to run up too quickly, the inevitable result is thin open growth, ineffectual for either fence or shelter. Few things give a more finished appearance to a garden than well-managed hedges, and for shelter in exposed situations their importance can scarcely be over-rated.

Kitchen Garden.—When the ground is frozen manure should be got on, as during hard weather this kind of work can be done without cutting up the walks by wheeling over them; land also, when in this condition, receives less injury from treading on it than it otherwise would do. Where the soil is of a heavy, retentive nature and much infested with slugs, it will, if vacant, be much benefited by being broke up 6 or 8 inches in depth when frozen. This can be easily done by an ordinary pick, leaving the lumps as rough as possible, so that the frost may effectually pulverise them as well as reach the substratum.

Conservatories.

Camellias expanding their blooms should be freely assisted with manure-water whenever the soil shows that they are in a condition to receive it. Whenever water is used, it should always be given in sufficient quantities to penetrate the whole of the soil in which the plant is growing, so as to thoroughly soak it and run freely through to the drainage. Nothing is worse than frequent driblets, by which only the upper part of the ball becomes wet and closed against air, while the lower portion, in which the principal feeding roots are, may be perfectly dry. Therefore give a thorough soaking, and then wait till the soil becomes moderately dry before watering is repeated. If this were more attended to, the difficulties experienced by many in keeping plants in good health would quickly disappear. Early flowering Heaths, such as hyemalis, gracilis, melanthera, and others, now going out of bloom, should have the strongest of the shoots that have borne flowers cut back to within an inch or so of the old wood. Any young growth not over 2 or 3 inches in length should be left entire, after being carefully picked over, in order to remove any decaying flowers or seed-pods remaining on the tops of the shoots. The plants should then be placed where they can enjoy a little warmth and a genial moist atmosphere, so as to induce them to make free growth, with which to furnish a good head of bloom. Any Epacrises that have done flowering should be treated in the same way. Cyclamens and Primulas will now be at their best, and of these seedlings are sure to show great variety, both of form and colour. The best of each kind should, therefore, be selected for seed-bearing purposes; and, to ensure the flowers setting, the plants should be placed on shelves near the glass, where they can get plenty of light and air. In the case of choice Primulas, it is sometimes best to fertilise them artificially, as the flowers are apt to fall before the pollen becomes distributed. A little timely attention in this way with a camel's-hair brush, ensures the flowers setting well. In watering Primulas, see that the crowns of the plants are not wetted, as that induces damping off. Continue to introduce into heat a few plants of the different subjects employed for supplying cut flowers or for other decorative purposes. Maintain a thoroughly moist atmosphere, with a uniform temperature of about 55°, advancing the same 10° or 15° whenever the sun favours an increase. Such plants as the beautiful feathery Spiræa japonica and the Eupatoriums can scarcely be over watered, and should at no times during their growth be allowed to become dry at the roots. The beautiful little Azalea amœna is a capital subject for forcing, as it requires but little artificial heat to get it in bloom early, and, when in that condition, it is one of the brightest and most enduring plants which we possess. Among large-flowered varieties, Pauline Mardner, Flag of Truce, and the old Fielder's White force best. The two former are double, and therefore very lasting when gathered for single blooms for mounting, a purpose for which they are very valuable.

Stoves.

Plants now going out of bloom, such as Sericographis Ghiesbreghtiana, Cyrtanthera magnifica, and others, should now be kept dry at the roots, in order to induce a slight hardening of their soft sappy stems previous to cutting them down. There is, perhaps, no other plant so generally useful as the Sericographis, as it supplies an abundance of brilliant flowers during the dullest months of the year; and, although requiring a cool stove, or intermediate house, up to the period of blooming, it will then stand anywhere in a temperature above 40°, and last in good condition for at least seven or eight weeks. Anyone having supplies of flowers to keep up during the winter should not fail to propagate and get up a stock of this useful plant. Cuttings put in now, or as early as possible, will, with proper care, make good flowering plants by next autumn. The Cyrtanthera, too, is an exceedingly useful winter-blooming plant, and, with a little management, may be induced to flower at almost any season. By keeping a few plants, and cutting one or two down at intervals, as they go out of bloom, and then shaking them out and re-potting them when they break, a regular succession of bloom may be kept up. This plant appears to have quite superseded the old Justicia carnea, which it greatly resembles; but it flowers with much more freedom. Where plants are required for table decoration, the useful old Tradescantia zebrina should not be overlooked, as it can be kept to any size, and in the smallest of pots, while it is always in good condition and ready for use. Any that are becoming leggy through losing their under-leaves may at once be decapitated, reserving the head, and a couple of inches or so of the stem, which, if potted, will soon strike root and be serviceable again. That gem among white flowering plants Eucharis amazonica should, where convenience exists for so doing, be plunged in bottom-heat of from 70° to 80°, and should receive plenty of tepid manure-water while making its growth, and producing its bloom. After this is over, keep it moderately dry for a time, lift the pots out of the plunging material, and set them on its surface, so as to afford a season of rest; then reduce the ball, and re-pot in good rough lumps of peat and loam, intermixed with a little sand and well-decomposed manure, the latter scattered over the crocks. Start the plants again in a brisk heat as before, and as soon as they get a good hold of the soil water them freely, but till then rather sparingly. Treated in this manner, they may be induced to flower several times during the year and be none the worse for it. Allamandas and all plants of that kind not in active growth should at this season be kept as dry at the roots as is consistent with their safety, as they will start much more vigorously when the time arrives for their doing so, after having been properly rested; and when kept dry they may be wintered in a much lower degree of heat than they should otherwise be subjected to.

Numbers of plants of all descriptions get their roots killed or injured during the winter through too copious watering; and it cannot be too strongly impressed on inexperienced plant cultivators how necessary it is to be careful as to the way in which plants are watered at this season, when the leaves take up so little and root action is sluggish. Gloxinias and Achimenes that ripened off early may now be started by giving them an occasional watering, just to keep the soil moist. Tubers of the latter are best picked out from the old ball, as it is difficult to do so after starting without injuring the young shoots. Place the small tubers thickly in pans of sandy leaf-soil, and put them where they can get a good bottom-heat. Take advantage of the inactive state of most plants just now to extirpate that worst of all insect pests, mealy bug. It increases with marvellous rapidity in spring, and strong measures should now be used to get the plants thoroughly free from it, as the task of doing so later on is almost hopeless. Remove every stick and tie that has the least appearance of harbouring insects. Scrape a few inches of the old tan or other plunging material off the surface of the bed, and remove the same in case of any having fallen amongst it. Keep the temperature as low as the occupants will safely stand, so as to prevent growth taking place during the present short days.

Ferns.

Where these are planted out in pockets, in imitation rock-work, it often occurs that a considerable settling or shrinking of the soil takes place owing to the difficulty of firmly filling the many intricate crevices behind the rock. A close examination should now be made, in order to see if any cavities exist between the rock and soil from the cause just named, for if these remain unattended to, the water effects its escape without passing through the soil or in any way benefiting the plants. Before filling these in, the sides adjoining the rock should be well probed in order to discover if there is any hollow parts behind. Should cavities be found, the soil should be well pressed back, using a blunt-pointed stake or some suitable tool for the purpose. Unless the pockets are of large size, the principal feeding roots will have found their way to the surface of the rock forming the walls of the pockets, and, therefore, great care must be exercised in ramming in fresh soil that these do not become injured. Before proceeding with this work, it will be well to look round and decide if any improvement can be made by a re-arrangement of plants, as a season's growth in the case of some of the stronger varieties greatly alters their appearance and renders them unsuited for the positions originally allotted them. When this is the case, the present is a good time for carrying out any alterations of that kind, as, with a little care now, when they are at rest, they will scarcely feel, so to speak, their removal. Ferneries, arranged in the natural style, are greatly improved by introducing a few plants of bold and distinct foliage that will associate well with the fronds of the Ferns. Of these, Palms are, perhaps, the best, but there are many others that may be used with excellent effect, and none more so than Begonias of the Rex type. Some plants of these in the Fernery here measure over 5 feet across, and have leaves of great size, and richly marked. These stand during winter in a temperature that rarely exceeds 45°, and one which is more frequently below 40° than above it. Therefore, anyone having the coolest of Ferneries may introduce Begonias into it with safety. They delight in the shade and moisture necessary for the cultivation of Ferns, and there are few other positions in which they can be used with such good effect. The much neglected Aspidistra and New Zealand Flax are two other plants that have a pleasing effect in certain positions in Ferneries, as, for instance, near rocky recesses containing water, where the leaves of the Flax drooping over the water has a very natural appearance.—J. Sheppard, *Woolverstone Park.*

Indoor Fruit Department.

Vines.—Now is a good time to start a second Vinery, to succeed that started in November. If the Vines were thoroughly cleaned and tied up when pruned, they may now be left undisturbed, except in the case of young Vines, or where hard forcing is contemplated. When more equal, breaking will be effected, laying them along the front of the upright sashes; but where there is no hurry, and the young Vines not too long pruned, laying them down may be dispensed with, and slow forcing will add to the general health. If means exist for getting at the roots, most of which will be found in the outside border, assist them by opening up the inside border at the back wall, removing the soil carefully down to the drainage. If no roots are found there, work forwards with a steel fork until you extricate a few of their points, finishing off with a straight face. Then run a turf-wall along, 18 inches distant from the roots just liberated, and fill up between that and the roots with a compost suitable to the well-being of the Vine. The space behind may be filled up with a mixture of newly-gathered leaves and litter from the stables, put in firmly, covering the whole carefully with soil. This fermenting matter will retain its heat for twelve months; the roots will run freely in the new soil, and enjoy the heating material. Water the border thoroughly and carefully with tepid water, and cover it up with a bed of fermenting material, consisting of leaves and stable manure, mixed together. The house should then be kept close, and the Vines frequently syringed during the day time. During mild weather, little or no fire-heat will be needed for a time. Take, however, all due advantage of both sun-heat and that arising from the fermenting bed, which will just now be found to keep the house over 50° at night, and higher during the day. Should the weather become colder, apply fire-heat by day only. In early houses, in which the production of fruit is of more importance than the health of the Vines, as soon as thinning has taken place, let them be pushed sharply along by day, shutting up early in the afternoon with as much sun-heat as possible, and a moderate amount of warmth by fire-heat, but allow the night temperature to fall below 65°, giving a little front air if the weather is at all favourable. Attend strictly to pinching, tying, and the regulation of the young wood, and thin as soon as the berries are properly formed. In houses in which the Vines are in bloom give air freely, but avoid currents. If the Vines consist of Hamburghs or other free-setting sorts, they will set their fruit thickly without any atmospheric change. Carefully examine Grapes still hanging for decayed berries, and on a dry day give the house a little smart firing, with plenty of air to expel damp. This will not now be often needed, as the worst season for damping is over.

Peaches.—In early houses let fire-heat be applied cautiously; admit air on all suitable occasions, but avoid draughts. During dull weather keep up a dry atmosphere in houses in bloom, assisting the latter to set by means of a camel's-hair brush used in the middle of the day, 55° should not be exceeded at night until the fruit begins to swell. In late houses, prune, wash, and clean the trees, in such a way that not an insect is left on them. For this purpose, I only use soft soap. Let all be tied up neatly, top-dress the border outside with good rich loam, and water the inside border; commence forcing with a low temperature, say 45° at nights, syringing frequently during the daytime, and shutting up as much heat as possible in the afternoon.

Figs.—Where early fruit is in demand, and where Figs in pots are started with the early Vines, Figs will now be partially shaded by the foliage, and where that is the case, they should be at once removed to lighter quarters, in which a temperature of from 55° to 60° is maintained. Stop all points after the fourth leaf has been made. Thin out the fruit where thickly set, and endeavour to prevent dropping. Syringe them well twice daily, and water freely with tepid liquid manure. Maintain a bottom-heat of from 75° to 80°, and an agreeable humid atmosphere. Start a Fig-house now where more than one is at command—that is if the trees have been thoroughly cleaned, properly tied up, the border well top-dressed, and the usual preparations made. Let the border have a thorough soaking with tepid water, and the syringe should be used freely during the day.

Strawberries.—Plants of these started early will require a temperature of from 55° to 60°, but the latter point should not be exceeded until the fruit is set, when 5° more may be given with advantage. Water liberally with tepid manure of about the same temperature as that of the house. Plants for succession should be introduced into heat according to the demand. Examine the drainage, remove all discoloured leaves, stir the surface of the soil, and shake off that which is inert; re-place it with a rich loam, place the plants near the glass, and never allow them to become dry. Commence forcing with a night temperature ranging from 45° to 50°, allowing a rise by day in accordance with the state of the weather.—J. Hunter, *Lambton Castle.*

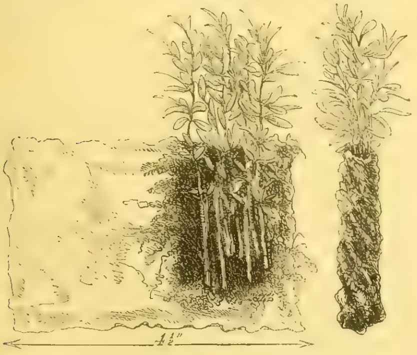
Hardy Fruit.

As soon as the weather and the state of the ground will permit, planting should be proceeded with and completed with as little delay as possible. Also the renovation of fruit-tree borders, that are in a poor or otherwise unsatisfactory state; badly or undrained soil, too light or dry soil, and deep planting, are the three principal causes of failure in fruit culture, and these should not be lost sight of in any attempts at resuscitation. In the case of retentive or clayey soils, drainage is of the first importance, and they may also be made lighter and opener by the addition of coal ashes, charcoal, burnt vegetable refuse, and lime scraps, all of which are beneficial to fruit trees. On light or dry soils chalk is invaluable, being a retainer of moisture, and for the production of good stone fruits on such soils it is a necessary ingredient. Light soils should also be firmly trodden down; and, immediately over the roots, the surface should be kept constantly mulched with manure, particularly in the summer season. As to planting the "collars" of the stems, when the soil is settled about them, should never be more than about an inch in the ground. Any sickly or failing trees in old orchards should not be suffered to remain, but be at once grubbed up, and the ground prepared for young trees, by taking out the old soil to a depth of 3 feet, and at least 9 feet in diameter, and replacing it with the best maiden loam procurable. Others that are in good health, but which produce inferior fruit, will be benefited by having the surface soil removed and fresh material applied, putting over that a thick coating of rotten manure. Gooseberries and Currants are frequently grown under the shade of other fruit trees, and, though in such positions they rarely prove quite satisfactory, yet, with rich annual dressings they may be made to thrive tolerably well, and such dressings should be applied now, either by first forking over the surface of the ground and spreading the manure afterwards to be washed in by the rain, or by lightly forking the manure into the soil. Of these two modes the first is best. All kinds of small fruits may now be pruned; Black Currants produce the most and finest fruit on the young growths of the past season; therefore, in their case, remove as much of the old wood as possible, and thin the young shoots out sufficiently to avoid their chafing each other. For Red and White Currants, "spur" pruning answers best, though it is advisable to leave a few new growths yearly to take the place of any that require removal through the long accumulation of ugly spurs. Gooseberries, though they bear the finest fruit on the new wood of the previous summer, are kept best in bounds by "spur" pruning; and, owing to the buds being so liable to the attacks of birds, by the adoption of "spur" pruning there are usually plenty left for a crop after a good thinning out, whilst buds on the new growths are generally cleared. The pruning and dressing, and, where necessary, also the planting, of outdoor Vines should be no longer delayed. Some planted here two years ago have made growth equal to that of those under glass, and doubtless, from present appearances, will yield equally good returns. Intending planters will find the following kinds best adapted for outdoor culture, viz., Black Hamburgh, Cambridge Botanic Garden, Esperione, Royal Muscadine, and Dutch Sweetwater.—W. WILDSMITH, *Heckfield.*

CUTTINGS BY POST.

WHAT are known as soft-wooded cuttings, that is, cuttings of such plants as Fuchsias, Verbenas, Pelargoniums, Dahlias, and other popular florists' flowers, are often sent through the post in spring at a few hour's notice, and the best mode of packing for such journeys may be worth attention, in order that the cuttings may arrive fresh and ready for inserting in sandy soil or in a bed or pot of moist heated sawdust surfaced with sand, at once with a sure knowledge that they will strike root and grow. There are several ways of packing cuttings for carriage by post, but that here represented has much to recommend it. In this case the newly-cut slips or branches are laid on a bit of fresh living Moss, moistened in water and squeezed partially dry; the whole is then encased neatly in a piece of sheet lead or tinfoil, which retains its position without tying, and prevents the Moss from becoming dry through evaporation. For packing in large boxes only the lower half of the cuttings need be enveloped, as shown in our engraving; but, if only one little bundle is to be sent, use more Moss and envelop the cuttings entirely, both in that and the tinfoil. A small tin or lightly-made wooden box is admirably adapted for "mailing" cuttings. Such boxes are generally sufficiently strong to resist crushing or jamming on the journey. Bundles of cuttings packed in damp Moss, enveloped in sheet india-rubber, and finally wrapped in two or three folds of stout brown paper, also travel safely. In cases where a few cuttings have to be carried home in the hand nothing beats Moss and brown paper as packing material.

B.



Packing Cuttings in Moss and Tinfoil.

HOW FLOWERS ARE FERTILISED.*

WE may regard a plant—and it is indifferent for our purpose whether we take the smallest weed or the stateliest forest tree—from two points of view. We may consider only its own individual life, and the parts of the plant, or organs, as they are termed, whose object is the maintenance of this life. With these organs, however—termed, for the sake of distinction, the vegetative or nutritive organs, and comprising the root, the stem, and the leaves—we have at present no concern, interesting as is the study of the structure by which they are adapted to their end. The other point of view is not the individual life of the plant, but the means with which it is furnished for perpetuating the race—for raising up new individuals after it has itself run its allotted term of life. The parts which are specially contrived for the purpose of effecting this object are called the organs of reproduction, and are those included under the ordinary term, the flower of the plant. A flower is, therefore, a complex organ, or rather an assemblage of organs, all having for their final purpose a certain process—which it is our purpose to consider somewhat in detail—known as the process of fertilisation. But before doing so I must describe in botanical language the various parts or organs of which a flower consists. If we look at an ordinary flower from the outside, the part which is first brought under our notice is a kind of cup, generally, but not always, green, which is called the calyx. Before the flower opens, when it is in the bud-condition, this cup envelops the internal parts of the flower, which are then in the process of development, and protects them from injury by any external agency; and the main function or purpose of the calyx may, therefore, be considered to be one of protection. Within the calyx is the most conspicuous part of the flower, generally, but not always, brightly coloured, which is called the corolla. The main function of the corolla is, by means of two properties which it ordinarily possesses—colour and scent—to attract insects to the flower for a purpose which we shall understand presently. Within the corolla come a number of bodies generally differing altogether in shape and appearance both from the sepals, or parts of which the calyx consists, and the petals, or parts of which the corolla consists, and ranging in number from one or two to a larger number than can be easily counted, the stamens. Now, while the calyx and corolla are of subordinate importance, as we shall presently see, in the construction of the flower, the presence of one or more stamens is absolutely necessary to ensure the reproduction of the plant. Each stamen consists of two parts, the filament or stalk, and the anther; the latter only being the really essential part of the stamen. The anther is a bag containing a quantity of very fine dust known as pollen, one of the two bodies which unite to bring about the process of fertilisation. Lastly, within the stamens, occupying always the centre of the flower, is the last of the reproductive organs of which it is composed, the pistil, which again assumes very different forms in different flowers. The pistil consists, in its most perfect form, of three parts: the bottom part is in the form of a bag or hollow receptacle, and is called the ovary, because it contains a number of minute egg-shaped bodies, the ovules; rising from the apex of the ovary is a stalk-like part, the style, surmounted at its summit by a body of very peculiar structure called the stigma, the purpose of which we shall have to examine presently. When the flower withers, the greater number of the parts which we have now been describing disappear, especially the corolla, the stamens, the style, and the stigma, and nothing is left except the ovary, sometimes surrounded by the persistent calyx. The ovary now grows and develops into what is commonly called, when mature, the seed-vessel, or more often, in botanical terminology, the fruit; and the seed-vessel or fruit contains the seeds, which are the mature or ripened ovules, just as the seed-vessel is the mature or ripened ovary. But the change from ovule into seed is not one of growth merely, but is dependent on the formation within the ovule of a body called the embryo; and this embryo can only be produced by the operation of the perfectly definite process which we have now to examine in detail—the process of the fertilisation of the ovule. If an ovule, at the time when the plant is in flower, is examined minutely under the microscope, it is found to consist almost entirely of cellular tissue, *i.e.*, of a number of minute sacs called cells, placed side by side in close juxtaposition, which form the nucleus of the ovule. These are usually enveloped in two coatings of firmer texture, an inner and an outer one, called the secundine and the primine. These two coatings are, however, not continuous over the apex of the ovule, where they leave an open channel, called the foramen or micropyle, communicating with the nucleus, and with a large cavity within it which is known as the embryonic sac. In by far the majority of plants the ovule does not, however, retain the position here indicated, but becomes inverted in the course of its growth, one side growing more rapidly than the other, so as to bring the opening or micropyle into close proximity to the placenta, as the point of attachment between the ovule and the wall of the ovary is called. If we now examine closely under the microscope one of the grains of the pollen contained in an anther, we shall find that it also has a somewhat complicated structure. Outwardly these grains vary greatly, both in form, colour, and size. Generally spherical, they are sometimes oval; or triangular, as in the Fuchsia, or Evening Primrose; or covered with minute spines, as in the Hollyhock, or Aster. They also are found to be hollow bodies, containg an oily fluid, in the inside, protected by two coats, an inner and an outer one, called in this case the intine and the extine. At one or more points of its surface the extine is weaker, and allows the intine to be seen through it. When the anther is ripe and discharges the pollen, a certain portion of it falls on the pistil, and on that portion of it at the summit of the style which we have called the stigma. The stigma is always distinguished by producing on its surface, at some period or other, a sticky glutinous fluid which causes the pollen grains to adhere to it. This is not the only effect on the pollen grains, of the viscid secretion of the stigma; it excites, by some unknown power, the development of the intine, or inner coating of the pollen-grain, which bursts through the extine, or outer coating, at the weak places I have already described, and protrudes in the form of a tube. This tube, called the pollen-tube, penetrates the loose cellular tissue of the style, grows with astonishing rapidity, and sometimes to an extraordinary length (in the common spring Crocus the style is sometimes several inches in length), through the wall of the ovary, the cavity of which it finally enters. The end of the pollen-tube now, so to speak, seeks out an ovule. From the position of the ovule being, as I have described it, usually inverted, the opening, or micropyle, is not far from the wall of the ovary. This micropyle, the pollen-tube enters, passing through the cellular tissue of the nucleus; enters the large cavity which I have described as the embryonic sac; there finally its end gives way, and the contents of the pollen grain are discharged into the embryonic sac. This is a brief summary of the process known as the fertilisation of the ovule, without which it is impossible for fertile seeds to be produced. Its immediate consequence is the formation within the embryonic sac of a body called the embryo, which at once begins to grow rapidly at the expense of the tissue of the nucleus, the whole of which it frequently absorbs. It is the presence of this embryo that constitutes the difference between the unfertilised ovule and the fertilised seed, and on it depends the power of the seed to germinate and to produce new individuals like unto itself.

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* A Lecture by Alfred W. Bennett.

Fertilisation of Diœcious Plants.

The contact between the pollen and stigma as carried out by Nature is not quite so simple as would be inferred from the description I have hitherto given. I have at present spoken of flowers as if they always contained both a pistil and one or more stamens. And in the greater number of flowers with which we are familiar this is the case, but not in all. In the Melon, for instance, the Cucumber, and other plants belonging to that tribe, some of the flowers are male, *i.e.*, possess stamens, but no pistil; while others are female, *i.e.*, possess a pistil, but no stamens. Each flower is, as it were, the complement of the other. In these cases it is obvious that the pollen necessary for the fertilisation of the ovule must be conveyed by some foreign agency from the male to the female flowers, which are in this case borne on different plants. Hybridisers generally do this artificially; but we shall see presently that Nature herself supplies a means. This fact in natural history was known as long ago as the time of Herodotus, who describes the process of caprification, *i.e.* the transference of the pollen, by which a crop of Dates was ensured on the Egyptian Palm trees, from the male to the female trees. Another instance of this is in the case of the Aucuba japonica, or, as it is commonly called, the variegated Laurel of our gardens and shubberies. This plant was introduced into this country many years ago from Japan, by the Dutch. The Aucuba is also one of these diœcious plants, as botanists term them, in which the same individual bears only male or only female flowers, and the plant first introduced happened to be a female one. Since it did not bear seeds, the only method of propagation was by cuttings; and till within the last few years the whole of the innumerable Aucubas throughout the country had been obtained in this way, or, in other words, were but separated parts of the original individual. Plants reproduced in this way can only repeat the characters of the parent plant; every spring, therefore (about March), we might see our variegated Laurels bearing their small purplish female flowers, but never by any chance producing seed. Not many years ago, however, male plants were also introduced by Mr. Fortune; the female flowers were fertilised, and bore seeds, which being sown produced new plants, some female and some male. The pollen of the Aucuba is now an article of trade in Covent Garden Market, and we may frequently see the shrubs ornamented with their bright red berries. Another instance of an unisexual but not a diœcious plant—for, in this case, the male and female flowers are borne on the same plants —is furnished by the common Hazel, on which, moreover, the two kinds of flowers are so different that if you saw them apart you would hardly believe that they had anything whatever to do with one another. The male flowers are, in this instance, the familiar yellow catkins which come out soon after Christmas, and remain on the tree for a few weeks, when they drop. Each catkin contains a very large number (perhaps 100 to 120) of such flowers; each male flower consists of ten to twelve anthers, and each anther contains an innumerable number of very fine light powdery pollen-grains. The female flowers are seen on the same branches in the form of minute bright threads, which are, in fact, the stigmas, the ovaries being concealed beneath a number of scales at the base. Some of the pollen-grains fall on the stigma from the catkin, push out their pollen-tubes, and fertilise the ovule in the ovary, which then develops into the nut. But one of the most beautiful examples of the mode of fertilisation in these unisexual plants is seen in a little water plant, the Vallisneria spiralis, a native of the south of Europe, grown very commonly in fresh-water aquariums, and affording a very beautiful object under the microscope, to illustrate the continuous circulation or rotation of the contents cf the cells of which the leaves are composed. The Vallisneria is, like the Aucuba, diœcious. The flowers of the male plants are borne on very short stalks, which do not raise them too near the surface of the water. The female flowers, on the other hand, are supported on the ends of very long stalks, which are curved into a corkscrew-like spiral, and are elastic. Submerged when in a young state completely beneath the water, when the pistil is in a condition for fertilisation, the spiral coil relaxes so as to bring the flower to the surface. About the same time the male flowers break off from their short stalks and rise to the surface; they move about for a time as if seeking the female flowers, at the same time discharging their pollen, some of which reaches the stigmas and fertilises the ovules. After the fertilisation is effected the coil of the stalk of the female flowers again contracts so as to bring the flower beneath the water, where the seeds are matured. This illustration introduces us incidentally to one of the most curious chapters in the more scientific departments of botany, that of the spontaneous or quasi-spontaneous movements of plants.

Hermaphrodite Flowers.

It will be seen from these examples that some means are necessary, in the case of those plants where the stamens and pistils are in different flowers, or even on different individuals, for the conveyance of the pollen from the one to the other. It might be supposed, on the contrary, that in perfect or "hermaphrodite" flowers in which both kinds of organs are present, the process would be a much simpler one, and that the pollen has nothing to do but to fall out of the anther on to the stigma in order to effect fertilisation. It was pointed out, however, as long ago as the close of last century, by one of these keen observers of Nature with whom that period abounded, Karl Conrad Sprengel, that the structure of a large number of flowers was such as to render this simple arrangement impossible. But the fact appeared to have been altogether lost sight of until attention has again been called to it, within the last few years, by a number of naturalists, among whom may be mentioned especially Hildebrand and Hermann Müller, in Germany; Delpino, in Italy; and, above all, Darwin, in this country, who has reduced the observed facts to a scientific law. A number of experiments, conducted with a patience and a philosophical power of observation which cannot be too highly praised, led Darwin to the conclusion that when a flower is self-fertilised—*i.e.*, when the ovules are fertilised by pollen from a stamen belonging to the same flower—the number of seeds produced is smaller, or their vigour is less, than if it is cross-fertilised—*i.e.*, impregnated by the pollen conveyed from a stamen belonging to some other flower of the same species; and that if this process of self-fertilisation is continued through several generations, the plant at length becomes altogether sterile. This fact when fully established experimentally, Darwin crystallised into the aphorism now so often quoted, that "Nature abhors perpetual self-fertilisation." Now for the facts: they are patent even to the most careless observer. In unisexual flowers it is obvious that cross-fertilisation must always take place, and even in hermaphrodite flowers we shall find that the same rule must necessarily prevail in most cases. If we take any flower belonging to the genus Campanula (as the Harebell, the Canterbury Bell of the gardens, or large wild Bell-flower of our hedges), and examine the structure of the flower when it is fully open, we shall see that the end of the style is divided into three conspicuous white stigmas covered with little papillæ, which indicate that they are in a receptive condition, *i.e.*, a state in which they are able to excite the protrusion of the pollen-tubes from the pollen-grains. When we look for the stamens, however, we shall find that the anthers have completely withered up, the pollen having been, in fact, discharged from them almost before the flower expanded—at all events, long before the stigmas had opened and exposed their papillæ. It is, therefore, almost impossible that any of the pollen can have fallen on the stigmas; and, if further examination is made, the pollen will be found collected in enormous glutinous masses on the hairs which clothe the lower part of the style. What then becomes of it we shall see presently. The same phenomenon is exhibited by the Pink, the Sweet William, the Stitchwort, or any other plant belonging to the Natural Order Caryophyllaceæ. Before the stigmas in plants of this order—sometimes three, sometimes five—are expanded, the anthers, which hang loosely suspended at the end of the filaments, have dropped off them and completely disappeared. Exactly the reverse is the case in a common roadside weed, the Rib Grass, or Plantago lanceolata. Here the flowers grow in a dense spike; in those which are just opening the stigma will be seen protruding like a fine feather from the calyx and corolla, but there will be no appearance of stamens. Examine the same flower at a later period, and you will find the stigma entirely disappeared; and then the stamens are protruded from the calyx and corolla, delicately poised, like in the Pink, at the end of long slender filaments. In a large number of flowers, indeed, the structure of the flower is such as to indicate that the parts are specially contrived so as to exclude the possibility of self-fertilisation. This is very well illustrated in the case of a beautiful flower common in the Lancashire bogs, and in the mountain districts of Cumberland and Westmoreland—the Grass of Parnassus, or Parnassia palustris. Five stamens, in this instance, surround the conical pistil, and are mature considerably before the stigmas are developed. The stamens are developed in succession one after another. As each ripens its filament lengthens, and it places itself right on the top of the stigma with its back to it, and the pollen is then discharged from the anther on the side away from the stigma, so that it is scarcely possible for any to fall on it; and this is done by each of the five stamens in succession. In the All-spice tree, or Calycanthus, a scented tree, flowering in the winter, we have a very similar contrivance for preventing the pollen from falling on the stigma of its own flower.

Transport of Pollen by the Wind.

From what has just been said it will be obvious that if the pollen is not intended, as a rule to fertilise the ovules in its own flower, some arrangement must be necessary for carrying it from flower to flower; and these are the arrangements for effecting cross-fertilisation, about which so much has been written of late in botanical works and popular treatises. The arrangements for this purpose may be classed under two heads—those dependent on the wind, and those dependent on the visits of insects. In the Hazel, the structure of the flowers of which has already been described, we have a very good instance of fertilisation by the agency of the wind. Everything here favours the dissemination of the pollen by the least breath of air. The catkins are lightly hung, so as to be swayed by every passing breeze; the pollen consists of very light dust-like grains, and the quantity of it is prodigious. The flowers also appear before the leaves are expanded, so that there is nothing to prevent the pollen being carried in all directions, and some must inevitably fall on the female flowers. If, indeed, the red stigmas are examined under a pocket lens, some of the fine grains will almost certainly be found adhering to them. In the Rib Grass, or Plantago, again, where we have seen that the anthers are suspended at the end of long slender filaments, the fertilisation is effected in the same manner. These two instances illustrate the law that those flowers in which the wind is the agent for their fertilisation are in general small and inconspicuous, there being no object for their being brightly-coloured. The arrangements of Nature in these cases, it will be observed, are simply such as to favour the distribution of the pollen—its light and dusty character and enormous quantity, and the loose manner in which either the anther itself or the catkin is suspended. The quantity of pollen in some of these unisexual plants is illustrated by the clouds of smoke, as it looks like, which rises from a Yew tree if struck with a stick or violently agitated by the wind at the time of flowering, giving it the appearance of a burning bush. Travellers state that the waters of some of the large American lakes, as lake Michigan, are covered at certain periods for a considerable distance near the shore by a thick stratum of a viscid sulphur-like substance, the pollen of the Pine forests, which must have been brought by the wind from a distance of several miles. It is generally believed—though on this point further experiments are still wanting—that our cereal crops, especially Wheat, Rye, and Barley, are fertilised exclusively by the agency of the wind. The flowers are small and uncoloured, without calyx or corolla; the anthers are hung lightly on the end of long slender filaments; the pollen is very fine and powdery; and insects are hardly ever seen to visit them. Favourable weather (fine and sunny with light breezes, and yet not so strong a wind as to disperse the pollen to too great a distance so that it will not perform the purpose for which it was designed) at the time when the plants are in flower—*i.e.* in the early part of June—is therefore of very great importance for the ensuring of heavy crops. But the cross-fertilisation of plants by the agency of the wind is not nearly so common, nor is it a phenomenon so striking or interesting to the ordinary observer, as cross-fertilisation by insect agency.

Transport of Pollen by Insect Agency.

In many flowers the pollen-grains are so heavy, or they are connected together by fine threads or by a sticky glutinous substance, that it would be quite impossible for the wind to effect their transport; and in these cases Nature has recourse to her gigantic army of insect workers to do this service for her. It is in seeking for their own food which consists in a number of classes almost entirely of the juices of flowers, that insects perform this service to the vegetable world; and the modes adopted to allure them are two-fold, the very points which render flowers so attractive to our senses—the beauty of their colour, and the beauty of their scent. That portion of the food of insects which they obtain from the vegetable world is almost always in the fluid state—the sweet juices of plants contained in various parts, but especially the flower. That part of the flower in which this liquid juice or honey is secreted is called the nectary, and occupies the most various positions in different flowers. In the large flowers of the Crown Imperial there is a deep pit at the base of each petal, containing large drops of honey. When the flower is in the form of a tube or bell, the bottom of this tube or bell is very commonly occupied by the nectary, as in the Salvia, or very often there is a small nectariferous gland at the base of each stamen. In the Hellebore two of the petals themselves are converted into nectaries; in other flowers some of the stamens: in fact, any part of the flower may be adapted to this special function. It is to this sweet secretion that odoriferous flowers generally owe their scent; and the very same property which induces us to cultivate them attracts also to them the insects in search of their food. In bright sunny weather our Mignonettes, Pinks, Roses, and other scented flowers may be seen to be visited by swarms of insects seeking nutriment from them. The nectary is frequently too deeply concealed in the flower—since it must be protected against the influence of rain and other injurious agencies—for the body of the insect to be able to be brought near it; and hence those kinds which visit the flowers with long tubes are commonly provided with a long proboscis, as may be seen in butterflies, moths, and bees. But in a very large number of plants which produce sweet juice suitable for the food of insects this juice is not scented at least to our coarse organisations; and in these cases the chief mode of attraction to the insects is the bright colour of some part of the flower, generally the corolla, or, when this is absent, occasionally the calyx. We see from this the reason of the law that may, perhaps, have struck some of you, that very brightly-coloured or large, conspicuous, variegated flowers, are seldom scented, while highly-scented flowers are often inconspicuous, or, if coloured, are, at least, not variegated. We may contrast, for instance, the sweetly-scented Daphne, Primrose, Sweet Violet, Lily of the Valley, Rose, Hyacinth, Evening Primrose, Lime tree, Mignonette, Amaranth, &c., all with inconspicuous flowers, or, if large and conspicuous, of uniform unvariegated colour, with the brilliantly-variegated but comparatively or quite scentless Fritillary, Pelargonium, larger and smaller Convolvulus, Tropæolum, Mimulus, Ranunculus, Pansy, &c. We have now seen how the bright colour and sweet smell of flowers aid in attracting to them insects in search of their food; but not yet how this is of advantage to the plant itself. If we notice a butterfly or a bee while rifling the sweets in a flower, we shall see a quantity of pollen dust almost invariably sprinkled over its head or other part of its body. This is independent of the great quantity of pollen which hive and humble bees carry away on their thighs, which they purposely rob from the flowers, and which they take home to their nests, where it forms the "bee bread" which they store up for their young while in the larva state. The arrangement of the parts of the flower, indeed, is almost always such that when withdrawing its proboscis from the corolla-tube, or other part where the honey is secreted, it must necessarily come into contact with one or more of the anthers, and thus carry off some of the pollen, which it lodges on the stigma of the next flower of the same species which it enters. Thus, in those flowers in which the pistil and stamens are mature at different times, the pollen is conveyed from the mature anther in one flower to the mature stigma in another flower which has opened a little earlier or a little later, and cross fertilisation is thus effected. The vegetable kingdom is full of contrivances for this carrying of pollen, by means of insects, and for rendering self-fertilisation impossible, or at least very difficult. In the Salvia the anther is at one end of a cross-bar lightly affixed across the end of the filament, the other end of the cross-bar being unprovided with an anther. When a bee inserts its proboscis into the flower its head strikes against the end of the cross-bar which has no anther, turns it right over, the end of the filament being the fulcrum, and tips the pollen out of the anther on to the back of the insect, and it is thus carried to another flower.

Fertilisation of Orchids.

A very remarkable series of contrivances for effecting cross-fertilisation has been illustrated, with great patience and ingenuity, by Mr. Darwin, in the case of our native Orchids, both the common meadow species and those which grow especially on the chalk hills of our southern counties. Mr. Darwin found that if one of these Orchids is covered over with muslin gauze so as to prevent the visits of insects it never perfects any seed ; indeed, the structure of the flower is such as to render self-fertilisation all but impossible. The pollen does not in these plants exist in separate grains, but is glued together into club-shaped masses called pollinia, placed immediately above the stigma, so that they could hardly, of their own accord, come in contact with it. These pollinia are attached to a viscid disc at the base. The Orchids are chiefly visited by butterflies and moths. When one of these inserts its proboscis into the tube of the flower which contains the honey, its head necessarily strikes against this viscid disc, which it detaches and carries away with the pollinia adhering to it. In Darwin's admirable work on the " Fertilisation of Orchids," a masterpiece of experimental research, which every one interested in the subject ought to read, is a drawing of the head of a moth, which he actually captured, with quite a number of these pollinia adhering to it. After the removal of the pollinia a very curious change takes place in their position in consequence of their exposure to the air. After a few minutes' exposure the viscid substance at the disc sets, or becomes hard, and in so doing changes the direction of the pollinia from vertical to nearly horizontal. The result of this is, that when the moth, with one of these pollinia attached to its proboscis, enters another flower, it must necessarily strike the pollinia against the stigma, and thus detach a sufficient quantity of the pollen of which it is composed to ensure the fertilisation of the ovule. All these processes may be followed by removing the pollinia from the flower of any common Orchid by means of a pin or fine pencil, instead of the proboscis of an insect. In Coryanthes the contrivance is still more remarkable. " The Orchid has part of its labellum or lower lip hollowed out into a great bucket, into which drops of almost pure water continually fall from her secreting horns which stand above it, and when the bucket is half full, the water overflows by a spout on one side. The basal part of the labellum stands over the bucket, and is itself hollowed out into a sort of chamber with two lateral entrances. Within this chamber there are curious fleshy ridges. The most ingenious man, if he had not witnessed what takes place, could never have imagined what purpose all these parts serve. But Dr. Crüger saw crowds of large humble-bees visiting the gigantic flowers of this Orchid—not in order to suck nectar, but to gnaw off the ridges within the chamber above the bucket : in doing this they frequently pushed each other into the bucket, and their wings being thus wetted they could not fly away, but were compelled to crawl out through a passage formed by the spout or overflow. Dr. Crüger saw a continual procession of bees thus crawling out of their involuntary bath. The passage is narrow, and is roofed over by a column, so that a bee, in forcing its way out, first rubs its back against the viscid stigma, and then against the viscid glands of the pollen-masses. The pollen masses are thus glued to the back of the bee which first happens to crawl out through the passage of a lately-expanded flower, and are thus carried away. When the bee, thus provided, flies to another flower, or to the same flower a second time, and is pushed by its comrades into the bucket, and then crawls out by the passage, the pollen mass necessarily first comes into contact with the viscid stigma, and adheres to it, and the flower is fertilised. Now, at last, we see the full use of every part of the flower—of the water-secreting horns, of the bucket half full of water, which prevents the bees from flying away, and forces them to fall out through the spout, and rub against the properly-placed viscid pollen masses and the viscid stigma. The construction of the flower in another closely-allied Orchid, the Catasetum, is widely different, though serving the same end, and is equally curious. Bees visit these flowers, like those of the Coryanthes, in order to gnaw the labellum ; in doing this, they inevitably touch a long, tapering, sensitive projection, or, as I have called it, the atenna. This atenna, when touched, transmits a sensation or vibration to a certain membrane, which is instantly ruptured ; this sets free a spring, by which the pollen mass is shot forth like an arrow in the right direction, and adheres by its viscid extremity to the back of the bee. The pollen mass of the male plant—for the sexes are separate in this Orchid—is thus carried to the flower of the female plant, where it is brought into contact with the stigma, which is viscid enough to break certain elastic threads, and, retaining the pollen, fertilisation is effected." To illustrate the extraordinary variety in Nature's contrivances, it may be mentioned that one species—the curious Bee Orchis of our chalk hills—offers a remarkably contrast to this ordinary arrangement. This Orchis Darwin has never, after the most diligent research, seen to be visited by insects ; and is, must, consequently, be self fertilised. Accordingly, its pollinia are found to be of different structure to those of other members of the family. Instead of standing stiff and upright, they have much longer stalks than is ordinarily the case, which, when mature are flexible, and cause the pollen-masses to hang down in front of the stigma, against which any breadth of wind would cause them to strike, and thus bring about self-fertilisation. It would seem as if different kinds of insects have a partiality for different kinds of flowers, and even for different colours. Plants with very large bell-shaped flowers are fertilised chiefly by large moths belonging to the tribe of sphinxes, and by large beetles of the cockchafer or rose-chafer kind. The largest-flowered of European plants—the Pæony, the Rose, the large white Convolvulus of the hedges, and the Evening Primrose—are fertilised in this way. The Evening Primrose, which opens about sunset, is visited by the largest kinds of night-flying moths, which are attracted from great distances by its delicate scent. The connection thus opened out between the animal and vegetable worlds, and their mutual dependence one on another, is almost infinite. Many plants would appear to depend for their fertilisation on the visits of one particular insect, native to the districts where it grows ; and, therefore, if transplanted to another country, or another climate, where this particular insect is not found, although they may flower abundantly, they will not produce fertile seeds. The American Yucca, for instance, which flowers with us, but never bears fruit, has lately been found to owe its fertilisation to a particular species of moth, which has its proboscis extraodinarily modified to obtain the nectar from the flowers of this plant only. Many of the exotic plants grown in our gardens, though thriving and flowering freely, are never known to produce seeds, doubtless from the absence of the insects specially adapted to fertilise them. This is the case with the Yellow Jessamine, so commonly seen flowering in the depth of winter, a native of Japan, and with the Calycanthus, or All-spice tree. There is a species of Orchis with the nectary of prodigious length (11½ inches have been measured in specimens cultivated in this country), called, from this circumstance, Angræcum sesquipedale, which long taxed Mr. Darwin's ingenuity as to the mode by which it could be fertilised, the nectar only occupying 1½ inch of the whole length of the nectary. He predicted, in his " Fertilisation of Orchids," that an insect must exist in its native country (Madagascar) with a proboscis long enough to reach to the bottom of the nectary ; and, quite recently, this has been proved to be actually the case.

Insects and Geographical Distribution.

The geographical limits of the natural distribution of many plants are again fixed rather by the distribution of the insects which fertilise them than by the climatic requirements of the plants themselves. Local botanists state that in certain districts of south Lancashire many wild plants are not found, or only very rarely, which are extremely abundant with us in the south of England, such as the Laminum album or White Dead-Nettle, the Convolvulus arvensis or smaller Bindweed, the absence of which can only be accounted for on similar grounds, there being nothing in the climate or soil to prevent their occurrence. Mr. Grindon states that the fragrant Labiates (every Labiate, in fact, that yields powerful odour) are wanting, except Stachys sylvatica, and the wild Thyme in one or two very rare localities. The white Dead Nettle, the Hound's-tongue, the Sweet Violet, the Plantago media, all among the commonest of common plants in the southern countries, are here all but entirely absent. The two common Mallows are very rarely seen, the common Bindweed, never ; the Cowslip is extremely local ; the Comfrey is unknown, as also is the commonest of the wild Poppies. On the other hand, some splendid plants, like the Giant Bell-flower, Campanula latifolia, hardly known in the south, are here very common. As one travels from a more southern clime northwards, one class after another of insects disappear, and with them the plants which depend on them for fertilisation. In Alpine and Arctic countries a number of the native plants, especially the trees like the Birch and the Fir, have very inconspicuous flowers, and are exclusively wind-fertilised ; while others have remarkably brightly-coloured or powerfully-scented flowers, like the Rhododendron or Alpine Rose, and the beautiful Soldanella and Gentian, which thrust their brilliant sky-blue flowers, even through the melting snow, to attract from great distances the comparatively rare insect visitors. Every traveller has remarked the brilliancy of the Alpine flora in May or June, or that of a country where the flowering season lasts for only a very few weeks, like Palestine; but few have probably speculated on any other reason for this than the egotistic idea that its only purpose was to gratify the eye of the passing traveller. Darwin, in his "Origin of Species by Means of Natural Selection," gives a curious instance of the mode in which these different forms of life are inextricably intermingled with one another. The common Red Clover is visited and fertilised only by humble-bees, the proboscis of the honey-bee not being long enough to reach the nectar. The number of humble-bees in any district depends in a great measure on the number of field-mice, which destroy the combs and nests. The number of field-mice is again largely dependent on that of cats; and the nests of humble-bees are therefore especially abundant near towns and villages where cats abound. Hence it may be said, without exaggeration, that to our domestication of the cat is due, to a large extent, the possibility of large Clover crops.

Miscellaneous Fertilisation.

The function of fertilising flowers is not absolutely confined to insects in the animal world; spiders and snails also do their part, though to a comparatively small extent. In tropical, and even in temperate America, a large part of this duty is done by humming-birds, which live on the honey obtained from the very long and deep tubes of such flowers as the Bignonia or Trumpet-flower. Some very curious relationships have been drawn out between the length of the beak of each species of humming-bird and that of the tube of the flower from which it chiefly obtains its food. Humming-birds are also said to have a *penchant* for brilliant scarlet flowers, which are very common in tropical countries, while the colour is very rare among the natives of the temperate climates. Among our common wild flowers it would be difficult to name any of this hue, except the Poppy and the little scarlet Pimpernel. But there is another important feature in special adaptation for insect fertilisation on which we have not yet touched; and this refers to the variegation of flowers of which we have at present spoken as being chiefly fertilised by insects of the largest kind have been uniform in colour without any variegation, as the wild Rose, the large white Convolvulus, the Pæony, and the Evening Primrose. There are a large number of other flowers, both larger and smaller, which owe their beauty to variegation, that is, to dots and streaks of a different colour to that of the greater part of the petals. It was pointed out as long ago as by K. C. Sprengel, the botanist of last century to whom I have already alluded, that whatever variegated plant you observe, say the Frittilary, the Mimulus, the Pelargonium, or the Pansy, the streaks or dots will invariably be found pointing towards the nectary, or receptacle of honey; and, that, moreover, brightly variegated plants are almost invariably scentless. The conclusion was irresistible, a conclusion abundantly confirmed by observation, that the variegation is a guide to insects in search of the food in those large flowers in which the guide derived from odour is wanting. It has also been observed, as might also have been expected, that variegated flowers are very commonly visited and fertilised by very minute insects, by whom such a guide-post is especially wanted. A very instructive lesson in Nature's economy of resource in not supplying, in the same instance, two means to the same end, may be learnt by contrasting a number of pairs of nearly-related plants; in each case one having uniform-coloured scented, and the other variegated scentless flowers, as the Primrose and the Auricula, the Sweet Violet and the Pansy, the Musk and the Mimulus, the Sweet-scented Orchis (O. Canopsea) and the Spotted Meadow Orchis, and many others. In the Wild Pansy (Viola tricolor) we have a remarkably good instance of the special contrivances intended to aid small insects in their search for honey. The nectary is, in this case, the extremity of two remarkable appendages, which hang down from two of the stamens into the "spur" of the corolla. Of the five petals, the lower and the two side ones have streaks pointing to the orifice in the centre of the flower. When an insect gets inside this opening, it finds it completely blocked up by a ring formed of the five anthers, except just in front, where there is a small opening just large enough to admit its body. Exactly opposite this opening is the thicker end of a wedge-shaped black streak, which conducts the insect right down the style to the very spot where it can reach the nectary. In making the descent, it must necessarily carry off some of the pollen which is discharged from the stamens internally within the ring; and in making the ascent and emerging from the small orifice, it must also, almost inevitably, enter the stigma, which is here a cavity in the upper part of the style, above the ring formed by the stamens. As far as my own observation goes, the Wild Pansy is fertilised only by the thrips, one of the minutest of insects; but the interesting point is, that both the little opening in the anther-ring and the black streak on the style are wanting in the sweet Violet, where they are not required, and where fertilisation is effected in quite a different way.

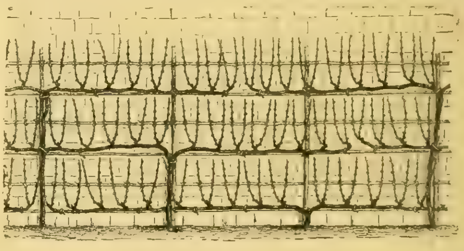
THE FRUIT GARDEN.

MELONS FROM MAY TO NOVEMBER.

Now that St. Michael Pine-apples have all but superseded those of English growth, attention will doubtless be turned to some other branch of fruit culture that will be likely to become more popular; and, in this respect, the Melon stands in the foremost rank. At present, however, it is only procurable for a few months in the year, and at a higher price than that paid for Pines at the same season. I am not now referring to the foreign Melons that find their way into our markets. Hitherto, the Melon has not received the same attention at the hands of market gardeners as the Pine-apple; indeed, it is seldom grown for the market by them; but now that they are giving up Pine culture they will doubtless find it profitable to devote more attention to it. Finding that Melons, with us, are always eaten in preference to Pine-apples, so long as they are to be had, I am about to devote what has hitherto been a Pine-pit solely to their culture, in order to extend the supply. This pit produced at the rate of three Pines to the light, which is narrow, and I was well pleased when we cut at the rate of from 10 to 12 lbs. to the light, all over from Queens eighteen months old or more. Now I hope, if I am ordinarily successful, to take two crops of Melons out of this pit between May and November, and at the rate of about 20 lbs., or thereabouts, to the light, which is a moderate estimate, and to have the pit at liberty for other purposes during the winter. With ordinarily fair appliances, the Melon is easily grown—the great point is to get a good variety to begin with. The essentials are a vigorous constitution, a fruitful habit, and good flavour, but it is not often these qualities are combined. When they are, the variety should be taken care of. Many Melons are excellent and high flavoured, which are otherwise worthless for general culture. Gilbert's Victory of Bath and Eastnor Castle Melons are two excellent kinds as regards appearance, size, and flavour, but they are not prolific. We have constantly grown the Colston Basset ever since it was sent out, testing the new introductions in the meantime as they came out, but none have approached the Colston Basset for general excellence. When it was sent out some years ago, Mr. David Thomson wrote thus of it in a contemporary:—"Were I restricted to one variety I should make choice of it. It has more good qualities than any other I have ever grown." This opinion of it induced me to plant it extensively the following season, and I can say that the character which Mr. Thomson gave it holds good still. It has a good constitution, is an exceedingly free bearer, handsome, well flavoured, and a good keeper. I planted it alternately with Gilbert's Victory of Bath and Eastnor Castle last summer, and found that it just bore three fruits to one of the other two, and kept its foliage better. The only variety with which I ever could compare it was one called Austin's Incomparable, which I grew for ten years or more, till it refused to thrive with me. The next best was Queen Emma, a kind belonging to the white-fleshed, yellow-skinned, oblong type, for the stock was not pure. It was an excellent Melon if not permitted to bear too soon, and its constitution was so good that as soon as one crop finished swelling it made a second growth, and set a second crop freely, and sometimes a third. All Melons will do this, I am aware, less or more, according to culture and soil, but few are so generally vigorous and fertile at the same time as the Colston Basset, which shows and sets freely when a foot high, but of course it is not advisable to crop any Melon so soon, except for an early fruit or two. The constant obstacles with which Melon growers meet, and which plague the inexperienced more particularly, are weakly-constitutioned varieties, and the difficulty of getting a good set of fruit. Many an amateur who superintends his own garden has abandoned Melon culture because he could not succeed in getting more than one or two fruits for his pains all the summer. It may be stated without hesitation, I think, that the Melons of the present day are not a whit better in flavour than those of twenty or thirty years ago. This is my experience, at least; and, notwithstanding all the new kinds which are continually making their appearance, it is only now and then one gets a variety which deserves perpetuating. The Melon season may be said to extend from the middle of May until the end of November, or to about six months. Melons ripened before the middle of May are expensive productions and inferior in flavour, and the same may be said of those ripened after the end of October or beginning of November. In order to prolong the season to the end of the latter month, the plan is to grow good keeping kinds that will last for a month after they are ripe. I have kept Colston Basset, and some others, for nearly that period in November. In the south and in favoured localities Melons may be had till Christmas, but I am speaking of what is practical generally. To have Melons in May, sow early varieties in January; push them on in a bottom-heat of from 75° to 80°, with a top-heat about the same—70° at night and 80° by day, for example—and keep the plants near the light, but reduce the temperature without fear, especially at night, in severe or cold dull weather. No healthy growth can take place if the temperature and light are not properly balanced. Naturally, the Melon is of sturdy habit, and the foliage is of a dark green hue; but those marks of good health can hardly be expected to be fully developed in early spring, though they should be aimed at. Early crops are frequently ruined by subjecting the plants to too high a temperature. In warm summer weather, when air can always be admitted freely, the Melon may be subjected advantageously to a very high temperature, both root and top, such as would be fatal to its welfare early in the season. Directions which apply to summer crops are, therefore, inapplicable to early ones. For the latter I have proved most satisfactorily, to myself, at least, that the temperatures given above are high enough, on the average, to produce healthy plants and good fruit before June in the case of early varieties; and, to secure fruit from these as soon as possible, the plan is to plant moderately thick, to top the most advanced plants as soon as they are about 18 inches high or so, in order to get a fruiting lateral or two, and to set the first fruits that show. The other plants need not be pushed so hard, but topped in succession, which will cause the fruit to ripen in rotation, and, of course, the later-topped plants, having most wood, will yield the heaviest crops. From four to six fruits to a plant should be aimed at, and a healthy plant is capable of swelling off that number to a presentable size. The lighter the crop the heavier the individual fruits are, but it is seldom or never that three fruits will weigh in the aggregate as much as six. It is best, therefore to look to quantity as well as size. Presuming the early supply lasts from the middle of May to the middle or end of June, it will be necessary to sow the second crop about the 1st of March. The treatment of successive crops is the same as that of the first, except that higher temperatures may be afforded, but 80° in the bed should never be exceeded by fire-heat, and hot pipes should be dispensed with whenever the natural heat economised will sustain it at that figure itself, and 90° should be the maximum for the top, unless hurrying is necessary. Sowings may be continued till the beginning of July or later, according to circumstances, in order to carry the supply into November or December. Much, of course, depends upon variety, mode of culture, soil, &c., and the prospect of getting two or more crops from the same plants; but most growers sow periodically to prevent mishaps, as the seed does not cost much, and the plants are there if wanted. As regards general treatment, much depends on whether the plants are grown on a hot-bed, under a frame, or in a house heated with hot water. In the former case much less watering and damping is needed, but generally speaking it will suffice to say that next to attention is the matter of temperature; as before pointed out, the maintenance of a genial temperature—neither too dry nor yet too moist—and judicious watering at the root are the chief points. While the plants are growing freely, and when the bed is well filled with roots, water should be supplied in abundance, and thin mulchings or top-dressings of good soil applied as the roots are observed on the surface, as the watering lays them bare and they suffer from drought. Damping overhead is most needed when much artificial heat is used, but in warm summer weather, when the fires are allowed to go out, copious waterings at the root are more than sufficient for all purposes. Ventilation must be attended to, and hardly too much air can be given consistent with the maintenance of the desired temperature. J. S.

When are Oranges fit to Gather for Dessert (see p. 52).—Having at one time a good collection of Oranges under my management, I found that as soon as they reached a deep yellow colour they were fit to gather; and that by leaving them too long on the trees they got spongy and juiceless. The Oranges grown in the open air abroad are, I believe, at their sweetest and best when they part freely from the stalk, being then quite ripe. Your correspondent likewise wishes to know how long Oranges take to ripen from the time the fruit has set, but this can only be known by registering the temperature of the house in which they are grown. The only Oranges I ever tasted equal to those of foreign growth were fruit of the blood variety ripened on the back wall of a Peach-house, where the temperature was very high in the summer months, but cold after the Oranges ripened in November.—WILLIAM TILLERY, *Welbeck*.

French Mode of Training Vines on Walls.—The following is a French mode of training Vines on walls, and a very good one it is; the walls are trellised with split pieces of Oak which last as long nearly as the walls themselves. The Vines are planted against them some 6 feet or so apart, as there are three tiers of Vines, or cordons as they may be termed. The distance for each Vine to run horizontally is something like 9 feet or so; the horizontal shoots are tied to the first bar or lath, and the rest of the space is left for the summer shoots and fruits, and only one bunch of Grapes is left on each pair of shoots. The shoot that fruits this year does not bear fruit next, and so on throughout. It is a simple and quick way of covering a wall, and one which in the southern part of England might be advantageously practised.—CHEVALIER.



French mode of training Vines.

Paul's Imperial Crab Apple.—Specimens of this very ornamental fruit were exhibited at South Kensington in September, 1874, by Messrs. Paul & Son, of Cheshunt, and a coloured representation of it was given in the January number of the "Florist." It was raised, we are informed, by Mr. Laing, of Twickenham, and is an accidental cross between the Red Astrachan Apple and the Siberian Crab. Its handsome foliage and vigorous habit, coupled with its brilliantly-tinted fruit, have gained for it general favour, The fruit almost declares its parentage, so vividly is it coloured, while the Astrachan Apple blood gives it the quality of being the earliest-ripening of the Crabs. It makes a handsome standard or free pyramidal bush.

Few and Good.—There is much less seeking after mere novelty in fruits in France than in England or Germany, and in France also it is rare that old vegetables are sent out with new names, or that seedsmen affix their own names to old kinds. In a German report on the fruit crops, we learn that at Angers, in one of the largest fruit-tree nurseries in France, the following seven sorts only are raised in large quantities:—Williams's Bon Chrétien, Duchesse d'Angoulême, Easter Beurré, Louise Bonne, Beurré d'Amanlis, Beurré Diel, and Beurré d'Aremburg. On an average, from 30,000 to 40,000 trees of each of the two first are sold every year, and about 20,000 of the other five put together. Even the best of the new varieties find scarcely any sale.

Wheeler's Russet Apple.—This is one of the most useful and delicious of dessert Apples from this time until May. Though small in size, and somewhat uninviting in appearance, it has a firm white crisp flesh that is juicy, brisk, and in every way excellent; the tree, being one of moderate growth, is well adapted for small gardens, and it bears abundantly every season.—A.

THE LIBRARY.

ORNAMENTAL CONIFERS, RHODODENDRONS, AND OTHER HARDY SHRUBS.*

THIS forms one of a series of practical and thoroughly useful "handy books" issued by Messrs. Blackwood. It is exactly what it professes to be—a manual for the amateur and the practical gardener, containing, as it does, selections of the best Conifers and flowering plants of that beautiful group known as American plants, together with many hints and suggestions respecting their propagation and culture. It is a book that will fill a void in many an amateur's library, and, as Mr. Fraser describes his plants according to the way in which they succeed in a latitude as far north as Edinburgh, little doubt, either as to hardiness or utility, need be entertained. Classified lists of select varieties are given where requisite. Taken as a whole, we can confidently recommend this little manual to all who wish to possess a good account of the best and most useful Conifers and American plants now in cultivation. The following extract will serve to show the way in which our author treats his subject:

Erica (the Heath).

Compared with the many hundreds of species and varieties of this brilliant genus, for which we are indebted to the Cape of Good Hope, and which all require greenhouse culture in this country, the European sorts, well known as hardy Heaths, occupy but an insignificant position. They form, nevertheless, a surpassingly beautiful and interesting group of dwarf, free-flowering, evergreen shrubs, easily managed, and worthy of far more attention than has hitherto been bestowed upon them. Of the few species from which the now numerous varieties in cultivation have sprung, the mountains and moorlands of our own country have contributed some of the finest, and they are found in more or less abundance in almost every country in Europe. Growing with the greatest luxuriance in sandy peat, which for the most part forms their natural soil, there are, at the same time, few loams in which they will not succeed, if rich in vegetable matter and free from chalk or lime; while the worst for the purpose may be adapted for their wants by the application of a moderate quantity of peat or old leaf-soil, and even a liberal allowance of well-rotted manure, which they all appreciate very much. Several of the showiest sorts—such as the varieties of herbacea, mediterranea, and australis—which flower in the order indicated from February till April, are valuable for winter or spring gardening, and have recently been used with the most admirable results, their neat habit of growth, fresh green foliage, and profusion of bright-coloured flowers, giving a gaiety and effect which no other plants could at that season, and contrasting admirably with the early bulbs with which they are associated. The other sorts—varieties of tetralix, cinerea, and vulgaris—are in perfection from May to September, the one succeeding the other, when vagans begins to develop itself, and continues till late in autumn. The smaller-growing sorts make neat edgings to beds or borders, as they may be kept trimmed and neat without disparagement to their flowering. The best way, however, of exhibiting their beauty to its fullest extent is that of grouping them in beds by themselves; and when carefully arranged, according to habit and colour of flowers, nothing can be more attractive. To keep them in health and vigour, it is necessary that they should be lifted every four or five years, and either replaced with young plants, which are easily obtained from layers, or sinking the old plants deep enough to cover the bare stems, which render them so unsightly. This can be done with perfect safety as the young shoots root freely in a few months immediately below the surface. The operation of transplanting may be safely performed at any time between September and April; we prefer, however, the months of February and March, if the weather is open and the ground in good working order, as on the whole the best for the purpose. Most of the sorts are then at rest, and the work is completed before growth commences. Of a large list of species and varieties, the following are the finest and most distinct:

E. australis.—This pretty species is found wild in Spain and Portugal, and was first introduced to this country in 1769. It is a close bushy shrub of about 4 feet high, producing its purplish-red flowers in abundance during the summer months. It thrives best in a sheltered situation.

E. ciliaris, indigenous to Portugal, the south of England, and some parts of Ireland, is a neat dwarf species from 9 to 12 inches in height. It produces its pale red flowers in terminal racemes from June to July. It is one of the finest of the hardy Heaths.

E. cinerea.—This species is found in great abundance in many of the northern countries of Europe, and all over Britain, rarely rising above a foot from the ground. The flowers are reddish-purple, changing to blue, and begin to expand early in June.

E. c. alba.—Occasionally found in the natural habitats of the species, from which it only differs in having pure white flowers.

E. c. atropurpurea.—In this variety the flowers are deep rosy-purple.

E. c. bicolor.—In this variety the flowers are pale purple, darker at the point.

E. c. coccinea.—Flowers bright red.

E. c. monstrosa.—A curious variety with monstrous flowers.

E. c. pallida.—Flowers blush.

E. c. purpurea.—Flowers light purple.

E. c. rosea.—Flowers bright rose, a very distinct and beautiful variety.

E. c. spicata.—A light pink variety, the flowers produced in spikes.

E. herbacea, indigenous to a wide area in central Europe, and in some localities in North Wales, is one of the finest of our hardy Heaths. It produces its lovely pale red blossoms from the beginning of March, and in some seasons much earlier, till the beginning of April; it is a magnificent spring bedding-plant, and as it may be clipped freely without damage, it is valuable as an edging in flower gardens. It grows about a foot high.

E. h. carnea.—According to some botanists, this is the type of the species, from which it only differs in having bright red or flesh-coloured flowers; it is also a fine bedding or edging plant.

E. mediterranea.—so named from being found abundantly in the countries bordering the Mediterranean Sea. It is also found in several districts in Ireland. In habit of growth and general appearance it resembles the preceding, which, as has been suggested, is probably only a form of this species. Its flowers are pale red, the anthers of a darker colour, and very prominent, and usually in perfection in April.

E. m. alba.—The flowers of this fine variety are pure white.

E. m. carnea.—Flowers flesh-colour.

E. m. glauca.—In this variety the foliage is glaucous, the flowers similar in colour to the species.

E. m. nana.—A very dwarf form, of a neat, round, bushy habit, well adapted for a small bed, or for edging in miniature flower gardens.

E. m. stricta.—A very distinct variety, with a close upright habit of growth.

E. m. rubra.—In this variety the flowers are of a deeper red than those of the species.

E. Mackaiana.—This species is indigenous to the Continent, and is also found in Connemara, Ireland. It has broad ovate leaves, silvery on the under surface, possibly a variety of tetralix; it grows about a foot high. The flowers are pale red, expanding in July and August. It is a remarkably showy plant.

E. multiflora.—Indigenous to the south of France, where it grows to the height of about 2 feet. It is a very distinct and showy species, producing its pale red flowers in great abundance, generally from August to September. It grows very freely, but requires a sheltered situation.

E. stricta, a native of the mountains of Italy, is a very distinct and handsome species, growing to heights of from 3 to 6 feet. In this country it is rarely found so high, nor does it flower so freely as some of the other species and varieties. Its foliage, for which alone it is worth cultivating, is of a beautiful warm green tint, very delicate and abundant. The flowers are purplish-red, and produced in terminal clusters. It frequently suffers damage from our spring frosts, but always recovers in summer.

E. s. minima.—A very dwarf variety, and in point of foliage one of the most elegant of the Heath tribe.

E. Tetralix.—This beautiful species is found wild in all the northern contries of Europe, and very abundanty on the moors and heaths of Britain, growing to heights of from 1 to 2 feet. It is readily distinguished by its ciliated leaves, arranged in four whorls round the stems. The flowers are in terminal racemes, of a delicate pink colour, and generally in perfection from July to August.

E. T. rubra.—In this variety the flowers are of a much deeper red than those of the species.

E. T. alba.—A beautiful variety with white flowers, very showy and desirable.

E. vagans.—This species is found wild in the south of France, in some parts of Ireland, and very abundantly on the moorlands of Cornwall. It grows from 6 inches to 1 foot high, forming a neat compact little bush. The flowers are pale purplish-red, produced in great abundance along the branches. They are generally in perfection in August and September. It is an exceedingly showy plant invaluable for bedding and margins to clumps of the larger peat-soil shrubs, and forms a neat close edging for flower gardens.

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* "Handy Book of Ornamental Conifers, and of Rhododendrons and other American Flowering Shrubs." By Hugh Fraser. W. Blackwood & Sons, Edinburgh and London.

E. v. alba.—Has pure white flowers, and is somewhat dwarfer than the species.

E. v. alba nana.—A very dwarf form of the preceding.

E. v. carnea.—The flowers of this variety are of a deep red or flesh colour.

E. v. rubra.—A very distinct variety with bright pink flowers.

E. vulgaris (Calluna vulgaris).—This is the common Heather or Ling of our moors, a plant so well known as to need no description. It is only noticed here as an introduction to an enumeration of its numerous varieties—most of which are so very beautiful that they should never be overlooked in forming a collection of hardy Heaths. They are all sports from the species, and have been found from time to time either associated with it in a wild state or in cultivation in gardens.

E. v. alba has white flowers, which it produces very abundantly.

E. v. Alportii.—A strong-growing variety, producing large spikes of deep red flowers. It is a singularly beautiful plant.

E. v. aurea, or ignea.—A very distinct variety with golden variegated foliage.

E. v. argentea.—In this variety the leaves and branches are freely variegated with a silvery tint.

E. v. coccinea.—Flowers very dark red.

E. v. decumbens.—So named from its peculiarly spreading, prostrate habit of growth. Flower purplish-red.

E. v. dumosa.—This variety has a very dense, bushy habit of growth. Flowers light purplish-red.

E. v. flore pleno has a robust habit of growth, and double flowers of a pale purplish-red colour. It is a fine showy plant.

E. v. pygmæa.—A curious little plant, forming a neat, round, cushion-like bush, with short, rigid branches, and small flowers, usually produced very sparingly.

E. v. pumila.—Of a dwarf, compact habit, but otherwise like the species.

E. v. Hammondii.—A robust variety, bearing long spikes of snowy-white flowers; it is one of the most beautiful of the tribe, and ought to be very extensively cultivated.

E. v. rigida.—Branches, short and rigid; flowers pale purplish-red; a very distinct variety.

E. v. Searleii.—A neat compact plant with white flowers, which it produces in great abundance; one of the best of the hardy Heaths.

E. v. tomentosa.—This form occurs in great abundance in the southern counties of England, and differs from the species in its leaves and branches being covered with a minute down. The flowers are light purplish-red, and produced very abundantly in long spikes.

THE KITCHEN GARDEN.

SNOW'S WINTER BROCCOLI.

As Broccoli or Cauliflowers of some kind are expected to be ready at all seasons, it is especially important that the supply should not fail during the winter months, as then the loss of so important a vegetable is much more felt than when a greater variety is in season. I find the early winter supply is most effectually met by late planted successional crops of Walcheren and Veitch's Autumn Giant Cauliflowers. With timely attention to protecting the heads by tying up the leaves and packing dry Fern fronds amongst the rows, a regular and satisfactory supply of these may be kept up in ordinary seasons until near Christmas. On the first indications of severe frost we lift the remnant of these crops and plant them thickly in brick-pits thoroughly protected from frost. The first month or six weeks of the year is the season for proving which sorts are really Winter Broccoli, and few things with which I am acquainted are more vexatious than growing several highly reputed sorts of early and late Broccoli, and after looking in vain for the early sorts to come in, when there is a dearth of vegetables, to at last find both early and late kinds coming in together. After trying most of the early kinds, both new and old, I am confident that we cut more heads off Snow's Early Winter than all others put together. If one could depend upon getting this sort true no other would be needed, as it is of so thoroughly "self-protecting" a character that the heads, when fit for cutting, will withstand with impunity a frost that will destroy most other kinds. The object at which we aim is not the production of gigantic heads, or a great quantity at any one time, but a constant succession of firm close Broccoli of medium size. We make small sowings during March, April, and May, and as soon as the plants are large enough, prick them out into nursery beds, and finally plant in open quarters or borders as the ground becomes cleared of early crops of Peas, Potatoes, &c. We have quite given up digging or forking the ground before planting this or any kind of Broccoli; for, if the soil is thoroughly manured and winter-cultivated for the preceding crop, the solidity acquired is beneficial rather than otherwise to the Broccoli. On soils in this condition the drought of summer has less influence, and the growth of the plants is more sturdy and robust than it otherwise would be, and, consequently, they are better able to withstand the inclemency of winter; their heads, too, are more solid and compact than those of plants grown on loose soil. If the weather is very dry at planting-time, we never wait for rain, but draw deep drills, at distances to suit the variety, and thoroughly soak them with water. We lift carefully and replant immediately, and after a good soaking of water, draw the dusty soil from between the rows, over the drill, and the plants grow away with scarcely any check. Frequent surface stirrings are beneficial in keeping down weeds, and in maintaining a loose surface. JAMES GROOM.

Henham.

TRIAL OF CELERIES AT CHISWICK.*

FORTY-SEVEN reputed varieties were received for trial at Chiswick this year, and of these twenty-three were red and twenty-four white. These, by the detection of numerous synonyms, were reduced by the fruit and vegetable committee to twenty, viz., seven red varieties and thirteen white, which have been decided to be distinct. The seed was sown early in March in heat, and the plants pricked off and planted out early in June in single trenches, and treated after the ordinary manner. The plants were frequently examined by the committee whilst growing, and again when fully grown, and a portion of each sort was left to test their capabilities of standing the winter. The season of 1874 was a particularly favourable one for the growth of Celeries, so that the trial was a satisfactory one.

1.—Red Varieties.

1. **Manchester Red** (syns., Laing's Mammoth, Radford's Pink, Sulham Prize Pink, Hooley's Conqueror Prize, True Manchester, and Giant Red).—Plant of strong and vigorous growth, attaining an average height of 3 feet 4 inches; leaflets, broad green; heads, compact, average girth, 12 inches; the outer leaf-stalks are moderately broad, slightly shaded with red; heart, very solid; the stalks, broad, thick, and fleshy, blanching for about 12 inches; a very excellent sort, stands the winter well. This is the largest variety.

2. **Ivery's Nonsuch** (syns., Violet de Tours, Osborn's Select Red, London Market Red).—Plant of strong and vigorous growth and habit, average height, 3 feet; the leaflets are broad, deep green, the pinnæ more widely situate than in other varieties; heads, compact, average girth, 12 inches; the outer leaf-stalks flat, of a deep rosy colour; hearts very solid, blanching for about 13 inches; stalks very solid, broad, thick, and crisp, and of a fine nutty flavour. A very excellent sort, and one of the best to stand the winter.

3. **Kimberley's Red** (syns., Improved Solid Red, Stuart & Mein's Solid Red).—Plant of regular but somewhat spreading habit of growth; height, 2 feet 6 inches; leaflets, broad, deep green; heads, compact; average girth, 11 inches; the outer leaflets narrow, rounded, and slender, of a deep rosy-red colour; hearts very solid, blanching for about 12 inches; the stalks broad, thick, and crisp, of a fine nutty flavour.

4. **Carter's Incomparable Crimson** (syns., Carter's Incomparable Dwarf Crimson, Hood's Dwarf Red).—Plant of close compact growth; height, 2 feet 6 inches; leaflets, rather broad, pale green; heads, very compact; average girth, 11 inches; outer leaflets, narrow, deep rosy-pink; hearts, very solid, blanching for about 11 inches; the stalks, thick and fleshy, and of fine quality. This is the dwarfest red Celery, and a good hardy variety to stand the winter.

5. **Webster's No. 1.** (syn., Webster's No. 4).—Plant of somewhat slender growth; height, 2 feet 10 inches; leaflets, broad with short petioles, giving is a bushy compact appearance; heads compact, average girth 10½ inches; outer leaf-stalks, slender and narrow; heart, solid, blanching for about 12 inches; the stalks, solid, thick, very crisp, and of good quality.

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* The seeds for this trial were presented by Messrs. Carter & Co.; Barr & Sugden; Minier, Nash, & Nash; Harrison & Sons; Osborn & Sons; Stuart & Mein; Veitch & Sons; Vilmorin & Co; Mr. Samuel Simpson, Mr. R. Dean, and Mr. A. Parsons.

6. Leicester Red (syns., Major Clarke's Solid Red, Turnmoss Red, Ramsey's Solid Red).—Plant of erect compact growth, presenting a very uniform appearance when growing; height, 3 feet; leaflets, rather small, deeply serrated, of a shining green colour, with a sort of silvery shade; heads, very round and compact; average girth, 12 inches; the outer leaf-stalks are rather narrow or rounded, of a clear rosy-pink colour; hearts, very solid, blanching well for about 12 inches, the inner stalks broad and thick, very crisp, and of a fine nutty flavour. One peculiarity of this Celery is, that of the core rising about 2 inches in the heart, as if it were to run to seed. This core portion is by many considered the best part. This variety, from its close compact growth blanches easily, and is the best Celery for autumn or early winter use, but it does not stand the winter so well.

7. Wright's Improved Grove Red.—Plant of the same appearance as Leicester Red, but somewhat dwarfer; the heads are also larger, being 18 inches in circumference; hearts, large, very solid, and good; this is an excellent sort.

2.—White Varieties.

8. Grove White.—Plant of strong and robust growth; height, 2 feet 9 inches. This is an exact counterpart of the Grove Red, but white, and possessed of the same excellent qualities. Does not stand the winter so well as other sorts.

9. Incomparable Dwarf White (syns., Plein Blanc Court Hatif, Sandringham, Dean's Compact White).—Plant of very dwarf and compact growth; height, about 24 inches; leaflets, small, pale green; heads, very compact, average girth about 10 inches; outer leaf-stalks, broad and deeply ribbed; hearts, solid, blanching about 10 inches, and of a pure white; the stalks, broad, thick, fleshy, crisp, and of fine quality. This is one of the best sorts, its close dwarf growth renders it easy to blanch with remarkably little earthing-up. It is good for early use, and also stands the winter well.

10. Plein Blanc.—Plant of dwarf compact habit; height, 24 inches. This is much of the same character as the preceding, but smaller and inferior. It is useful for an early supply.

11. A. Couper.—Plant, small; height, about 24 inches; leaflets, small; heads, small, outer leaf-stalks, very narrow. This is not of much use only for very early work, the small heart blanching very quickly. It soon runs to seed.

12. Turc Grand.—Plant of robust growth; height, 2 feet 6 inches; leaflets, large, broad deep green, outer leaf-stalks broad, much ribbed; heart, small. It may be useful for an early supply, but soon runs to seed.

13. Seymour's White (syns., Goodwin's White, Northumberland Champion White).—Plant of somewhat spreading habit of growth; height, 3 feet; heads, large, 12 inches in girth; outer leaf-stalks, broad, very deeply ribbed; hearts, solid, blanching to nearly 14 inches; the stalks, broad, thick, and fleshy. This is the largest-growing white Celery, and apt to become pithy if very strongly grown.

14. Prizetaker White (syn., Veitch's Silver White).—Plant of somewhat slender growth; height, 3 feet; leaflets, small, deep green, sharply serrated; heads, large, girth 11 inches; outer leaf-stalks, narrow; hearts, somewhat loose, blanching to about 12 inches; the stalks rather soft, but of fine flavour; rather tender.

15. Dixon's Mammoth White.—Plant of close compact robust growth; height, 2 feet 3 inches; leaflets, broad; heads, large; girth, 14 inches; outer leaf-stalks, very broad, about 2 inches; hearts, very large, blanching about 11 inches, somewhat soft, but excellent. It stands the winter well.

16. Great Eastern.—Plant of loose spreading habit, so much so that it is difficult to keep the heads together, and much addicted to throwing-up side shoots; height, 2 feet 9 inches; leaflets, small, pointed, very pale green; heads, small, girth 10 inches; hearts, loose and small. A very worthless sort, and decays early.

17. Haywood's White Queen (syn., Stuart & Mein's Giant White; Goodall's Flat-stalked; Webster's White).—Plant, of robust growth; leaves, spreading; height, 2 feet 9 inches; heads, large, 13 inches in girth; outer leaf-stalks, very broad (about 2 inches), much ribbed, and coarse; hearts, solid blanching in about 14 inches; the stalks very large, broad, thick, and fleshy; but without much flavour. An excellent sort to stand the winter.

18. Veitch's Solid White (syn., Danesbury).—Plant, of close compact growth; height, 2 feet 6 inches; leaflets, broad, very deeply toothed or serrated, giving it a distinct appearance; heads, compact, girth 11 inches; outer leaf-stalks rather broad, deeply ribbed, pale green; hearts, very firm and solid, blanching from about 12 inches; the stalks broad, thick, crisp, and tender. A very excellent variety, and stands the winter well.

19. Boston Market.—Plant, dwarf, from 18 to 20 inches high; leaflets, small pointed and sharply serrated. This variety is not used to produce a single head, as the ordinary Celeries, but having the peculiarity of forming a number of side shoots or small heads which are blanched. It is suited for early work, and it begins to run to seed almost as soon as planted out.

20. Frise, Curled or Garnishing.—Plant of loose growth; height, about 2 feet; leaves, very pale green, and deeply cut or curled almost like Parsley. It is very ornamental. The leaves may be used for garnishing, but it is of no other use. It is very tender, and runs early to seed.

21. Turnip-rooted (syns., Celeri navet; Rave; Rave d'Erfurt; Soup Celery).—This is quite a distinct vegetable, the plant forming a large bulb at the base of leaf-stalks like a Turnip. This bulb is used in soups, much in the same way as Turnips, and not the leaf-stalks as in other Celeries, and requires no blanching. It is not much cultivated in this country. A. F. Barron.

DIGGING.

For this purpose, the best tools, no matter what may be their first cost, are the cheapest in the long run. As regards spades and forks, one made of the best steel will last as long, or longer, than two of the common, clumsy, soft implements usually sold by country ironmongers; but even this difference, although important, is small in comparison with the increased quantity and quality of the work done by a man furnished with the improved tool. I have sometimes met with workmen who were opposed to any change being made in the way of implements; and in this matter there is an immense amount of latent conservancy in most districts; but a small amount of perseverance, accompanied by a practical demonstration of the superiority of the improved tools, is generally sufficient to convert the most stubborn stickler for old-fashioned modes of doing work. I do not know any single operation in gardening so illustrative of personal character as digging. I never yet knew an idle careless man make a good digger, nor a man who could dig well, and put his heart into his work, who did not prove a useful handy man at any other work to which he might be put, with a small amount of training. No young gardener, who wishes to rise, ought to despise the spade, as its proper use, either by himself or others, has more influence upon his future career than any other tool with which I am acquainted. Digging is even now, in many places often imperfectly done. Yet there is no work that is more important. In digging or trenching in autumn and winter, the ground can be scarcely thrown up too roughly. As large a surface as possible should be exposed to the action of the atmosphere; no time should be wasted in attempting to chop and cut it to pieces, as the weather will do that better than any workman can, however careful he may be. The great point is to work the soil up deeply and roughly, and then in frosty weather, if possible, to take a pick and pick it over so as to loosen up the frozen crust and let in the air still deeper. On no account, however, should snow be turned into the ground, nor yet in trenching should frozen soil be deeply buried, as, when thus turned down, it is a long time before it thaws, and for a long time after it remains wet and sodden. As spring comes round we can no longer count upon frost as an ameliorator of the soil; therefore, in all digging which it may be necessary then to do the soil must be thoroughly broken up with the spade, especially where land is constantly under crops. In some soils, too, dug deeply after February there is often a difficulty in securing the necessary firmness. If too much air is let into such as are naturally porous, plants may suffer from drought, even though the season may not be dry. In short, though digging may seem a simple operation, very much depends upon its being done at a right time as well as in a right manner, and the right time depends in a great measure upon the character of the soil and sub-soil, and upon the nature of the succeeding crop. E. Hobday.

Russian Mode of Forcing Asparagus.—This, according to a writer in the "Almanack du Jardinier," is very successfully done as follows:—Towards the close of September well-established Asparagus beds are covered with well-rotted manure or leaf mould 14 inches deep, the mould extending 1½ feet beyond the edge of the bed. When the moment for beginning to force arrives—October, November, December, or later still—a layer of fresh manure, ready to ferment, 28 or 30 inches thick, is spread over the entire surface of the first stratum, and the whole covered with matting. Three weeks afterwards the growers cut fine Asparagus from 6 to 8 inches long. To get at the Asparagus, the beds are uncovered over lengths sufficient to supply the quantity required. When the cutting is taken, the plants are covered again exactly as in the first instance; namely, with 14 inches of spent manure or leaf mould, and an upper layer of fermenting material some 30 inches thick. Asparagus grown in this way is said to be excellent and eatable throughout its whole length. Such quantities are gathered that it is exported from Moscow, where it is grown as above described, to all parts of the Russian Empire.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

January 19th.

At this meeting, Messrs. Veitch & Sons staged an attractive collection of new and rare Orchids, Palms, Bromeliads, and Cyclamens. Mr. Green, of Reigate, furnished a choice selection of new or interesting succulents; and an interesting collection of late Pears came from the Society's garden at Chiswick.

First-class Certificates.—These were awarded to the following:

Dendrobium teretifolium (Denning).—A very singular Australian species, popularly known as the Cobweb Dendrobe. It has thick aërial roots, woody, zigzag pseudo-bulbs, and from five to seven-flowered spikes of whitish blossoms, the linear segments of which remind one of those of Oncidium phymatochilum. The lip is curiously curled, or revolute, and terminated at the apex by a slender tail. The leaves are from 6 to 9 inches in length, and of a glaucous green colour, thong-like, or terete, and hence the specific name. It had been flowered in a cool temperature, and bore forty spikes, on which there were about 200 flowers. As shown by Mr. Denning, this plant is certainly by no means unattractive. It was figured many years ago in the "Botanical Magazine," v. 79, t. 4,711, having then flowered in Messrs. Loddige's collection.

Mesembryanthemum truncatellum (Green).—This is a curious and interesting species from the Cape of Good Hope, and one which rarely bears more than four thick rounded leaves. The specimen shown was not in flower, but in the "Botanical Magazine" for 1874, t. 6,077, it is represented as bearing bright yellow-rayed flowers nearly 2 inches across.

Chicory or Witloof (Carter).—This is the Witloof or White Leaf which is grown in French and Belgian gardens as a salad vegetable; its flavour is delicately bitter and superior to that of either Endive or Dandelion. It is in reality a large, close-growing variety of common Chicory. A figure and description of it will be found in The Garden, Vol. VII., p. 391.

Orchids.—Of these, Messrs. Veitch & Sons had a fine collection, in which we noticed several flowering plants of Odontoglossum Roezlii, including white, pink-spotted, and purple-blotched varieties; O. Pescatorei, with a twelve-flowered spike; pink and white forms of O. Rossii majus, both forms bearing four-flowered spikes of large blossoms of excellent substance. In all, four forms of this plant were shown. The free-blooming Oncidium cheirophorum was represented by two healthy and floriferous little specimens; and a fine vigorous plant of Angræcum sesquipedale bore three spikes, on each of which there were three flowers. This is the largest-flowered of all Orchids, and has a spur fully 12 inches in length. A fine plant of Odontoglossum Hallii bore a twelve or fourteen-flowered spike of yellow and white, chocolate-spotted blossoms. Masdevallia tovarensis was represented by the specimen to which we alluded in our "Notes" the other day (see p. 26) as being furnished with seventy flowers and buds. Among Lady's-slippers we remarked Cypripedium argus, which, to the foliage of C. barbatum adds flowers on very long scapes; also a plant of the brown varnished C. villosum, bearing seven fine flowers; C. Schlimmi album, having four spikes, the flowers on which had less rose in them than in the normal form; two hybrid varieties were likewise staged by Messrs. Veitch, namely, C. Crossianum, a hybrid raised by Mr. Cross, gardener at Melchet Court, between C. insigne and C. venustum. Its flowers are yellowish-brown; the oval, dorsal sepal being green dotted with brown, and tipped with white. The other, C. tessellatum, is a hybrid, raised by Messrs. Veitch & Sons, between C. concolor and C. barbatum; it has purplish speckled flowers, about the size of those of C. concolor, with a curious flattened lip, and it bears two flowers on a scape; the leaves are like those of C. concolor, but broader and darker as regards the markings. Plants of Lycaste Skinneri and Cattleya Trianæ completed the group, to which it was recommended a silver medal should be given. Mr. Hill, gardener to Sir W. Marriott, Bart., Down House, Blandford, sent a very fine plant of the old Cattleya bulbosa, bearing in all fifteen bright lilac purple-tipped flowers. Mr. Burnley Hume, Hill House, Winterton, contributed a fresh healthy specimen of the new Masdevallia Davisii, on which there were ten rich yellow flowers. This is a finer species than we had at first imagined, it would prove one which well deserves culture, being very floriferous and showy. Mr. Green had a group of Masdevallias, including a good plant of M. polysticta and two forms of M. melanopus.

Miscellaneous Subjects.—Messrs. Veitch staged plants of Nephrolepis phillipinensis, a graceful-looking crisped species in the way of N. pectinata, but a stronger grower. A collection of hybrid Amaryllis of the A. pardina and A. Leopoldii sections was shown; also specimens of the old blue-flowered Eranthemum pulchellum; a pan of plants of the brilliant scarlet Aphelandra aurantiaca Roezlii; and Tillandsia Lindeni, a fine specimen, with a strong spike of bright blue Iris-like flowers, and three other spikes pushing up from the elegant rosette of slender arching leaves. Associated with these, we also noticed T. Zahni bearing a spike of bright yellow flowers, each tuft being subtended by crimson-stained bracts. This plant has somewhat the habit of T. Lindeni, but is of a much nobler habit, and, apart from its attractive inflorescence, it deserves culture as a fine-foliaged plant. Mr. Chambers, of Mortlake Nursery, Isleworth, contributed six seedling varieties of Hoya carnosa, including H. carnosa picta and H. C. variegata. Mr. Green, of the Botanic Nursery, Holmsdale Road, Reigate, sent a choice and interesting group of succulents, several of which were new and unnamed; among these we remarked a new dark leaved Aloe from Magdala, Decabelona elegans ("Botanical Magazine," t. 6,115), Mesembryanthemum truncatellum, and one or two other highly interesting kinds; also Lobelia subnuda, a kind with finely-cut leaves, and furnished with panicles of white flowers. In habit and general appearance this closely resembles some of the Saxifrages. Messrs. Stewart & Mein, Kelso, sent a fine plant of the old Rhipsalis pachyptera, 3 feet in height. This plant has large rounded phyllodia similar to those of Opuntia, but thinner in texture, their margins being fringed with golden-yellow buds and white myrtle-like flowers.

Fruits.—In the competition, which took place on this occasion, for Mr. William Paul's special prize, offered for the best bunch of Waltham Cross Grapes, Mr. J. Douglas, of Loxford, was first with a good cluster, the berries in which were very fine, well coloured, and remarkably fresh for the season. Mr. J. W. Chard, Clarendon Park, Salisbury, was second with a much smaller bunch. Mr. Chambers contributed a box of Blenheim Orange Apples, in excellent condition; and a collection of dessert Pears, of excellent quality, came from the Society's garden at Chiswick. Amongst these we noticed samples of Winter Nélis, Passe Colmar, Glou Morceau, Beurré Sterckmans, Belle aprés Noel, and Beurré d'Esperen. M. Cox sent specimens of the Redleaf Russet Apple, a kind which resembles the Royal Russet in form, and one which is rich and good in flavour. Mr. W. Taylor, gardener to the Marquis of Bath, at Longleat, showed a fresh and handsome dish of the Orangefield Tomato.

Vegetables.—Messrs. Carter & Co. sent a sample of Porter's Excelsior Potato, and also specimens of Witloof, which, blanched, forms a most excellent salad vegetable. Messrs. Stuart & Mein furnished specimens of their strain of Chilian Beet, including pink-white, crimson-orange, and yellow-stemmed varieties; also their Proliferous Green Curled Borecole. Mr. Walker, of Thame, showed three fine bulbs of selected white Spanish Onion; also his Long Keeping, which varied from the white Spanish only in having a brown skin.

Royal Horticultural Society's Schedule for 1876.—This differs materially from its predecessors as regards the number of exhibitions, which are limited to four, viz., the spring flower show in March, the great plant and fruit show for two days in June, the show of cut Roses, Fuchsias, succulents &c., in July, and the customary fruit and Chrysanthemum show in November. The lists of prizes at these shows differ but little from those issued in previous years, but there are one or two noteworthy alterations. Thus, at the March show, the old class for hardy plants in pots is eliminated, and in place thereof good prizes are offered for fifty hardy spring flowers and shrubs in pots unforced. Another class is introduced for thirty spring flowers and shrubs forced. In the schedule for the June show the prizes for hardy plants are withdrawn, a matter to be regretted, as these have invariably proved most attractive. It is gratifying, however, to find that the class for twelve Dracænas originally cut out has been reinstated. The list for July presents no new features, but it is satisfactory to observe that the class for bedding succulents has been retained. The most gratifying feature of the November fruit show is the fact that fruit grown abroad and in the Channel Islands, has been assigned a class to itself. A new class is introduced for twelve berry-bearing plants in pots, an interesting display of which may be expected.—D.

NOTES AND QUESTIONS—VARIOUS.

Chrysanthemum virginale.—This is the name of the white Anemone-flowered Chrysanthemum figured in The Garden (see p. 33). I have grown it for many years; it is the latest white variety, and was sent out in 1870 by Mr. J. Salter. It is a valuable kind on account of its lateness, as it is always in bloom and quite fresh at Christmas.—T. Davis, *Park Nursery, Plumstead Common.*

Pitcher Plant "Sports."—We have an old plant of Nepenthes distillatoria here, which has thrown out a young shoot near its base, that bears pitchers like those of N. Rafflesiana, whilst on the other parts of the plant the pitchers are those of N. distillatoria. I have hitherto considered the two kinds distinct, but the circumstance just recorded would lead to the belief that one is merely a sport from the other. N. distillatoria is said to have been introduced from China, and N. Rafflesiana from Singapore.—W. H.

London Pride as an Edging to Winter Beds.—This is one of the best plants with which to edge winter beds that I know of. It takes the place of Echeverias in summer bedding, and is thoroughly hardy and easy to increase. It is well adapted for rough rock-work or for naturalisation in shrubberies and woods. When well established, clumps of it form quite a cloud of delicately-tinted blossoms in May. Its neat rosettes bloom freely in spring, and furnish then one of our prettiest flowers.—J. Groom.

Cattell's Eclipse Potato.—This received a first-class certificate at the Chiswick Potato trial two years ago. It is a good late kind, and deserves extensive cultivation for spring consumption. The tubers are long and flat, and somewhat Fluke-like. The skin is rough and netted; the flesh white, soft, and mealy, and well flavoured. It is one of the latest to ripen, and for that reason is useful to cultivate for the latest consumption.—D.

Corners of Box Edging.—No greater eyesore can exist in a kitchen garden edged with Box than trodden-down corners. For this, the best remedy is to drive good strong stakes, at least 2 feet long, into the ground in a sloping direction, until they just cover the edging. These are not easily removed, and it is surprising how soon passers-by learn to avoid them; the corners thus protected grow as freely as any other part of the edging.—J. Groom, *Henham.*

No. 219.] SATURDAY, JAN. 29, 1876. [Vol. IX.

> "This is an art
> Which does mend nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

WINTER GARDENS IN GREENHOUSES.

AMONGST the multitude of glass structures annually erected in this country, a great many are wholly or inadequately provided with heating apparatus. These occur chiefly in villa gardens, and, as a rule, present a somewhat forlorn appearance in winter. This need not, however, be the case, as, by a judicious selection of shrubs and plants, they might easily be made to assume a cheerful aspect; many shrubs, although commonly grown out-of-doors, are all the better for the protection which a glass-roof affords. The golden variegated Euonymus, Laurustinus, Sweet Bay, Myrtle, Skimmia japonica, berry-bearing Aucubas, and some Conifers, look well and succeed admirably even in pots, in which they may be kept for several years in good condition. If plunged up to their rims in a cool situation during summer they require no other attention beyond copious waterings in dry weather. Some pretty hanging baskets may be made with variegated Ivies, some of the evergreen Sedums, and the variegated Periwinkle, which, under such circumstances, has a light and elegant appearance. I have a large specimen of it at the present time, which, owing to its distinct and constant variegation, always looks fresh and cheerful; baskets, filled with such plants, should in the summer time be suspended in some cool airy place, and a little manure-water should occasionally be given them. Among flowering shrubs we have Deutzias, Spiræas, Rhododendrons, Kalmias, Laurustinus, Daphne Cneorum, Chinese Azaleas, and many others. These, in an improved climate, under glass, will flower earlier and in greater perfection than in the open air. They need not be annually shifted and potted; on the contrary, I have grown Deutzias for several years in succession in the same pots, and kept them in good condition by the aid of weak stimulants applied during the growing season. Polyanthuses, of which many fine varieties can now be had, are all the better for a little shelter, as is also Primula japonica. A few potfuls of Neapolitan Violets, Lilies of the Valley, Forget-me-nots, Heartsease, and similar plants will suffice to keep a little glass-house gay and interesting; and if in early spring, after all danger from frost is over, a few Cinerarias, Chinese Primulas, Cytisus, and other showy-flowering plants which at that season of the year are within the reach of everybody are indulged in, a veritable little Eden may be created in what was formerly, comparatively speaking, a desert. A covering of mats laid on nightly will keep all safe from spring frosts. Many Ferns, too, would succeed admirably in such houses. Among Scolopendriums alone, there are numerous singular and beautiful varieties, and Cyrtomium falcatum, Lastrea opaca, and Onychium japonicum may be instanced as peculiarly adapted for such purposes. The size, form, and general arrangement of the plants in such places will, of course, depend upon the taste of the grower, and the interior shape and fittings of the house. Supposing it to be a lean-to, which is generally the case in villa gardens, there will probably be a level front stage, and either another occupying the back part of the house, or, as is oftentimes the case, open space from the path to the wall. The front shelf may be filled with the smaller kinds of bushy plants, including Ferns, arranging them with due regard to contrast, and bringing them down gradually from the front sashes towards the path, the whole to be edged by a row or two of Primroses, Violets, and similar plants of dwarf habit; if there be no back stage, which for our purpose would be preferable, the wall should be wired or latticed and covered with some evergreen Tea and Noisette Roses with good high stems in pots. These will furnish a profusion of flowers some time before they can be obtained outside. In summer they can be untied and moved out of doors to make new growth. I have seen some very fine Roses produced in this way. A few tall Rhododendrons, Conifers, Bays, and similar plants should be placed next the Roses in such a way as to cover their bare stems; in front of these other plants should be placed according to their heights, so that the whole may form an interesting bank of verdure. Here and there a strong post should be driven into the soil to serve as a support for a piece of board or bracket on which a flowering plant may be placed, taking care that the stand is sufficiently low to admit of the pot being effectually concealed by the surrounding foliage. In this way excellent effects may be produced, examples of which are not uncommon on the Continent. There banks of evergreens often exist, among which flowering plants are interspersed in the manner just described. A broad border of Selaginella forms the edging, amongst which are plunged Daffodils, Squills, Primroses, Hyacinths, dwarf Ferns, and similar plants, the whole presenting an unstudied and natural appearance. One advantage belonging to this style of arrangement is the greater variety which it affords, and the ability to make more of one's blooming plants than otherwise could be done. In these remarks, I have only named such plants as are easily cultivated, and which may be readily procured. To these I would recommend attention to be paid at first; but the collection may be gradually extended, so as to include some of the rarer kinds. Many who possess a small greenhouse would be glad to devote a little time to its decoration; but where the plants usually grown in pots in such houses are kept, they are debarred from doing this, owing to the constant attention which they require. They would like to see their glass-house furnished; but they are only able to deal with soft-wooded plants, and the expense of firing and labour, under such circumstances, is more than they can afford. To cultivators, placed under such conditions, I would therefore say, Give the system to which I allude a trial. JOHN CORNHILL.

Byfleet.

PRUNING FOR A CROP.

THE object of pruning is undoubtedly to increase the fertility of fruit trees; yet, in many instances, that object is entirely defeated by the very means that are supposed to be best calculated to produce good results. One of the chief causes that tend to failure is the too strict adherence to orthodox rules, without studying their effect on individual varieties, viz., making the form of tree and specimen of training of primary importance, and rendering the fruit-producing qualities subservient to the form of the tree. It is a very pretty addition to a garden to have rows of trees the very reflex of each other as regards symmetry, &c., whether pyramidal, horizontal, or any of the numerous devices into which a tree can be trained. But while some kinds will conform to this, and still maintain their fertility, others resent such treatment, and produce little else but leaves and useless wood. If we take the Vine as an instance of forced fruits, and one which, under any circumstances, must be badly used to make it unfruitful, we shall not find the same mode of pruning the best for all kinds; for, although Hamburghs, Sweetwaters, and many varieties, will show fruit at every bud if the wood be well ripened, thus enabling them to be pruned as close as walking sticks, yet other varieties—of which the Barbarossa is a type—will produce scarcely any bunches, if close pruned, for several years. But if young rods be annually led up to replace worn-out ones, the produce will equal, if not excel, the most prolific of other kinds. For open-air culture of Vines on walls, I am decidedly in favour of a modified form of the long-rod system of training; and new vigour may be infused into old Vines by gradually replacing the old rods with young ones. As regards the cultivation of stone fruits on walls, I prefer the fan system of training to all others, for many reasons, not the least of which is that it admits of a constant succession of young bearing wood being introduced without necessitating the removal of any of the main branches. For, although Apricots, Cherries, and Plums will bear freely on spurs, the fruit is not so fine as on the young wood, neither does it receive the full benefit of the wall, either when in blossom or ripening. Peaches and Morello Cherries are usually trained so as to depend entirely on the preceding year's wood; and I find the same mode of training may be adopted with advantage for many other kinds. Fruit borne on long spurs away from the wall is in but little better position to that borne on standards. The horizontal form is generally adopted for Pears, either as a wall, tree, or espalier, but requires great care in pruning, or the centre of the tree will produce little save breast-wood, at least with the majority of sorts. Young bearing wood cannot be trained between the principal branches, so as to receive the full benefit of light and air, and the outline of the tree is entirely destroyed, if straight lines be in the least departed from. Pyramidal and bush trees admit of great latitude as regards the retaining of young fruitful shoots, and are therefore preferable. Moderately strong straight growths are essential in forming the main branches in all forms of training; but anyone conversant with fruit culture must be aware that it is on the small well-matured spray-like growths that fruit-buds are most abundant: and when the form of training does not admit of these being retained, I consider that it is opposed to the real object for which the fruit tree should be grown. JAMES GROOM.

Henham.

CHRYSANTHEMUMS FOR FURNISHING.

THOUGH the Chrysanthemum is not a flower which one cares to use much for bouquets, yet it is one of the most generally useful that we possess for other decorative purposes, wherever display is an object—coming in as it does when most other flowers are scarce. There are many Chrysanthemums now, the flowers of which are really beautiful, and indeed but little inferior to those of the Camellia. Let me state, therefore, for the benefit of the uninitiated in its culture, that it is easily propagated by division of the roots, and by means of layers and cuttings. By division is the best plan, where a stock of good bushy plants and plenty of tolerably good flowers are wanted without much trouble. I have seen as good a display of flowers upon plants of this kind as anyone could desire, either for conservatory decoration or for cutting. When Chrysanthemums have to be propagated in this way, save the old stools, keeping them, after being cut down, in as cold quarters as possible till spring; for it does not do to force growth early in the season. About the beginning of April shake out the stools, and divide them into two, three, or four pieces, according to their size and the size of the specimens desired, and pot in well-drained 9, 10, or 12 in. pots, as may be needful, using good substantial loam mixed with a little cow manure, if procurable, and leaf-mould or peat; but let it be loose and rich. After potting, set the plants in a cool frame, if available, or, if not, all closely together in some warm sheltered corner out-doors, and protect them from frost, when required, by some temporary covering. When they begin to grow freely, plunge the pots to the rim in a bed of ashes, in the ground in some sheltered situation, and be sure to water them freely, using very weak limpid manure frequently. By-and-by the roots will push through the bottom of the pot into the soil, to prevent which lift the pots clean out of the ground once every fortnight. If the shoots seem to be too thick they may be thinned out, and to preserve the foliage intact, do not spill any manure-water on the plants in watering; in fact, do not water over the foliage at any time, but use the spout of the watering pot without a rose, and water abundantly, never allowing the plants to flag while they are growing, or stunted growth and a premature development of inferior flowers will be the result. Plants propagated by division need not have their shoots topped, but may be allowed to grow on uninterruptedly; and, if all has gone on fairly, they should be good bushy specimens, well furnished with flower-buds, by October. Before they get top-heavy, or are in danger of being blown about by wind, they should be supported by putting a small stake to each shoot. The plants should be housed before the buds suffer from frost, though a few degrees will not injure them. If flowers be not wanted till late in the season, they are better left out-of-doors as long as possible. When they are taken in, let it be to one of the coolest houses, from which they can be introduced to the greenhouse or conservatory, as desired; but when under glass they must have light and air in abundance, and not be allowed to suffer from want of water at the root, otherwise mildew (the worst enemy of the Chrysanthemum) will appear, and will soon destroy both flowers and foliage. When this disease is noticed, sulphur dustings must be at once applied, and a little heat to dry the air will also help to check its progress. Chrysanthemums do not bear forcing well, and should not need pushing if the plants be well grown and matured. A temperature of from 45° to 50° suits them well, and will bring the flowers out in proper form. Another way of growing plants by division is to plant them in the open border about 3 feet asunder, and take them up with balls and put them into pots in October. By far the most vigorous plants are got up in this way, but they suffer considerably in the lifting. When grown for the market they are sometimes planted out in this way, and, instead of moving the plants, a temporary glass structure is placed over them during the winter. Exhibitors maintain that Chrysanthemums raised from cuttings produce the finest flowers; but their superiority is probably due to the extra attention which the plants receive in other respects when grown as specimens. Cuttings of them should be put in in February or March, and the young shoots that spring from the old stools should be used for the purpose, cutting them off at a joint, and about 2 in. long. They will be found to strike readily in a temperature of from 60° to 70°, or in an ordinary cutting frame, if inserted in shallow boxes of sand and leaf-mould, or in pots like other cuttings; but they should be removed from the warm frame to an ordinary greenhouse temperature as soon as struck, as they dislike fire-heat as much as Calceolarias. When hardened off a little they should be potted, one or two together, in 4 in. pots, have their tops pinched, and be placed in the greenhouse again, or a cool pit, placing the pots closely together to prevent too much evaporation and consequent drought about the roots. In April they may be finally shifted, using pots in size proportionate to the specimens desired. At this stage the shoots should be pegged down to the soil to form the base of the future plant. When they have grown a little they will need another pegging before the pot is covered, and another pinching of the tops, performed so as to secure a well-balanced specimen; but all pinching should be discontinued before the middle of June, and the shoots allowed to extend as fast as they will. After this watering and similar matters must be attended to as before directed. S.

BOUGAINVILLEA SPECTABILIS IN INDIA.

WITH reference to the note (see p. 83) on the flowering of a Bougainvillea eighteen months old, I may mention that a plant of that age would, in the open air, be much larger at Bangalore, and at the present time would be showing a few of its lovely mauve or Peach-coloured bracts that are so admirably set off by little flowers of the proper complementary colour. The following brief description of its growth and habit at Bangalore and Madras—one being a dry and the other a moist climate—may lead cultivators of this beautiful plant to come to some definite conclusion as to the best mode of treatment for it here. At Bangalore rain seldom falls from the middle of December to the middle of April, and throughout February, when the Bougainvillea is at its brightest, the days are warm, and the north-east wind often blows with considerable force, but the nights are cool and still. The means for that month of the corrected readings of the thermometer for the three years 1871, 1872, and 1873, recorded at the Civil Hospital Observatory —which, though protected from the sun, is free to every breeze, and is 3,000 feet above the level of the sea—are as follows:—maximum, 84·1; minimum, 61·6; and the mean temperature, similarly calculated, 72·5, which corresponds almost exactly with the mean annual; the mean humidity for February (100 being maximum) is 59, while for March it is only 49; the corresponding means for the whole year were 82·33, 64.00, and 72·47; the maximum during any one day of that period being 95, and the minimum 54. This grand climber flowers most luxuriantly at Bangalore and other places in the Mysore country at an elevation above mean sea-level of from 2,000 to 3,000 feet. It grows without the least care or attention in the ordinary red soil, and, notwithstanding a hot sun, high dry wind, and driving dust, it is now exhibiting, at every turn, magnificent masses of its rich inflorescence, which is so abundant as to throw the true foliage completely into the shade. The effect of this on a specimen some 35 ft. high, bathing in the sunlight, is almost indescribable. At

Madras, where the heat is greater, and the atmosphere is charged with much more moisture, the Bougainvillea does not flower. It makes sturdy enough growth in the ordinary blackish soil; but under such conditions, it persistently refuses to flower, notwithstanding all the efforts made to induce it to do so, by pruning and manuring it, or by letting it have its own way. Without seeing the plant in question and its surroundings, it is difficult to say what should be done to it in its present stage. The temperature of the house is not given, nor the hygromatic state of the atmosphere. If it be at all like that of Madras, the reason of its refusal to flower seems capable of explanation; and it would be reasonable to endeavour to imitate, to some extent, the warm dry climate of Bangalore. The growth may have been forced too much in uncongenial soil; and it might be necessary to pinch it in a little, though this should be avoided if possible, and to give the roots more room than a 14-in. pot will admit of. Probably if it were merely transplanted into a prepared bed of rich red loam, opened with good old manure and a little coarse sand, and watered gently so as to keep the soil moist, it would respond well to the treatment; and if by some arrangements of the pipes the bed could at the same time be slightly warmed, and the young plants be given as much air and sun as this uncertain climate will permit, the growth would possibly be so decided as to induce it to put forth some inflorescence during the hot weather of the coming July. By analogous treatment, taking the difference of climate into consideration, a very well-rooted layer, about 3 ft. in height, succeeded wonderfully. It was planted against a gable end in the Lál Bágh in July, 1872. By February, 1873, it had made a good spreading growth, and then put forth a few bracts at the ends of the shoots; the same treatment was continued, and by the succeeding February it not only covered the gable end, and began to overlap the roof of the summer house, which is 20 ft. from the ground, but came out in abundant inflorescence. It was transplanted into a bed such as is described above, carefully watered, and trained against the wall, which was exposed to the full blaze of the sun till 3 p.m. Pinching and pruning were not allowed, with this exception, that any foreright shoot that could not be laid properly in the desired direction was cut out. Under such treatment, the most satisfactory results were obtained, for the plant, while it made the most vigorous and rapid growth, was in the highest state of health, and the inflorescence appeared to me to be of a deeper and more beautiful colour than if it had been left to itself. J. P.

Gesnera Cinnabrina for Winter-table Decoration.—This will endure the changeable temperature of a dining-room or hall, better than any fine-foliaged plant with which I am acquainted. I prefer the following treatment to that of growing a number of plants in one pot, a plan which has been recommended. As soon as the stems are decayed, shake the plants out of their pots, place the bulbs in a pan filled with peat and silver sand; and when the young shoots are 2 in. high, re-pot singly in 48-sized pots, using a mixture of loam, peat, silver sand, and well-decomposed sheep-droppings. While they are in active growth, I water freely with weak liquid manure, made from sheep-droppings, and continue to do so until the flowers appear; after which I use nothing but soft water. Under this treatment, from three bulbs broken up into small pieces, I had four dozen fine plants, well furnished with foliage. Young plants with a single stem, flowered in small pots, I find to be much more effective than when they are allowed to branch.—J. M'A., *Clyde House, Dublin.*

Begonia Frœbellii.—This new species of a genus, now becoming yearly more popular, is not only a really splendid acquisition, but is also a very distinct plant. Like that of B. Veitchii, its foliage is all radical, and is clothed with a plush-like tomentum, especially on its under surface. The flower scapes are very stout, much branched, and of reddish-purple colour, becoming more vivid near the summit, where the branches each terminate in from three to four deep vermilion-coloured flowers, perianth, germen, and peduncle being of nearly the same tint, though the seed vessel assumes a greenish hue after the flower has fallen. The stamens of the sterile flowers are remarkable for having linear anthers, and the stigmas are of an unusual form. It is a native of Ecuador, and, being found at a considerable elevation, there is good reason for believing that it will prove quite hardy in England.—W. Thompson, *Ipswich.*

NOTES OF THE WEEK.

—— We have recently tasted some of the sweet Capsicums "Pimientos dulces," familiar to few in this country, but much liked in various parts of Spain. They have a very agreeable and distinct flavour, with barely a trace of the pungency of the Capsicum. The sample we tasted was a preserved one; this variety would seem to be well worth a place in English gardens.

—— The recently-issued schedule of prizes offered by the Royal Horticultural Society shows that the number of exhibitions for this year has been cut down to four, among which no mention is made of a provincial show. The amount of prize money to be awarded by the Society is about £1,115, and special prizes are offered by Mr. Bull, Messrs. Veitch & Sons, Carter & Co., Sutton & Sons, and by Mr. Monro, the total amount being about £358.

—— A German correspondent of ours has purchased a little valley in the Central Alps with a view to cultivate Alpine plants on an extensive scale for purposes of observation. This reminds us of the lovely Alpine gardens that might be made in many stony wastes and rocky knolls in various hilly parts of England. Our Augsburg friend proposes to give us in due time an account of his mountain garden.

—— Messrs. Weeks, of Chelsea, have, for their handiwork shown at the Cologne Exhibition, received one of those very ugly and inartistic "diplomas," which German lithographers alone know how to produce, and, in addition, a massive gold medal and £50, as a reward for their skill and enterprise.

—— In a quiet little garden, beneath the shadow of Peterborough Cathedral, the winter Heliotrope (Tussilago fragrans) is now blooming freely, and is forming large patches close to a sunny wall. In the same little garden we saw, last spring, a large breadth of the lovely blue Apennine Anemone (A. apennina), which then looked as though it had been long established in that little nook.

—— The declared value of Potatoes imported into the United Kingdom last year was over one million and seventy-one thousand pounds. This may serve to show how much room we have for improvement in this and many other directions. Even the common Horseradish is now imported in quantities from the Continent. Why we should pay millions annually for products that might easily be grown in our own country is a question that will some day have to be answered.

—— The opening of the new aquarium at Westminster, which took place on Saturday last, has some interest for horticulturists from the predominance given in it to floral decoration and from its connection with proposed great flower shows. Nothing could surpass the good taste and abundance of the floral display made by Mr. Wills, who causes many to wonder where he finds his seemingly inexhaustible supplies of forced Lilies of the Valley and other choice flowers of the season. The Lilies dotted all over the beds and borders as if in their native woods formed the largest and finest display of forced blossoms we have seen.

—— Last week the additional improvements on Clapham Common were completed, and the Metropolitan Board of Works, who rescued this suburban land from speculative builders, by purchasing the manorial rights at a cost of £17,000, will not enclose any portion of the common, but preserve it as an open park for the public. The gravel and other pits have been filled in. The Mound, and the Long, Windmill, and Island ponds will be kept as ornamental water. The handsome Chestnut trees will not be disturbed, nor the "Nine Elms." A long avenue of trees has been planted by the road-sides. The digging of turf and gravel and cutting of furze will be prohibited. The common rights of the ratepayers to the pasturage of cattle are not interfered with, and sports and pastimes are permitted; but many of the objectionable innovations which existed will be suppressed.

—— M. Lemoine announces two double varieties of tuberous-rooted Begonias, for distribution during the present year, namely, B. Gloire de Nancy, the habit of growth and foliage of which resemble those of B. boliviensis, the central or male flower of each fascicle of three being fully 2 in. in diameter, and as double as a Camellia-flowered Balsam, the colour being a rich vermilion-scarlet. The other, B. Lemoinei, is of more dwarf habit something approaching that of B. Sedeni, the flowers being borne on much longer peduncles. The flowers measure fully 2½ in. across, are very double, and of a vivid orange-scarlet colour, flushed with vermilion. Both are said to be very attractive plants for indoor decorative purposes, being as easily propagated and grown as the single varieties. It is interesting to note that in all the double-flowered Begonias the duplication is confined to the central or male flower of each fascicle, the stamens of which are transformed into petals, while the female flowers retain their normal form and arrangement of parts.

ARISTOLOCHIAS.

These free-growing twiners, remarkable for the grotesque appearance of their flowers, come mostly from the hot, damp regions of the Western Hemisphere, and, therefore, are particularly suited for clothing pillars or rafters in warm stoves. They may also be easily grown in the shape of trained specimens if required, a mode of treatment by which their singular flowers can be more easily examined than they otherwise could be. They may be readily struck from cuttings made from half-ripened shoots, taken off with a heel. This is necessary, as, if strong, succulent shoots be used, they are liable to damp off, unless the base of the cutting consists of a portion of the more solid wood, formed at its junction with the mature shoot from which it has sprung with sufficient heat. They may be struck at any time of the year, but they are generally in the most suitable condition about the end of March; put them singly in small pots, with a little drainage in the bottom, on which is placed a mixture of half-sifted peat and sand, with a little clean sand on the surface; place them under a propagating glass, and keep the soil moist, as succulent cuttings, such as those of Aristolochias, require a good deal of moisture, otherwise they are likely to flag, which has the effect of seriously retarding the formation of roots; let them be in a temperature of 70°, and shade closely from the sun. They will root in a few weeks, when they should be at once transferred to 6-in. pots; being mostly strong growers, they will succeed in almost any description of good soil, sufficiently porous to allow the large quantity of water they need to pass freely through it, yet good loam is preferable to peat, as in it they do not run so much to leaf, and form flowers more freely. For this first potting, sift the loam and add one-sixth of leaf-mould and a moderate quantity of sand. The plants should now be kept in a temperature of 75° during the night, with 10° higher during the daytime, and a little air on when the weather is sunny; a slight shade will be required when it is bright, using the syringe freely in the afternoons. By midsummer the roots will have filled the pots, they should then be moved into others 3 in. larger; use similar proportions of loam, leaf-mould, and sand, but do not now sift the loam, merely breaking it by hand; press the compost firmly in the pots, and pinch out the points of the shoots, so as to induce them to throw out several breaks. Treat them through the summer as to heat and shade as already recommended, giving more air as the season advances; when the growth requires it, place in the pots several tall sticks, and round these wind the shoots, but do not allow them to twine to the sticks or each other, or they will cling so fast as to render them liable to be injured when removed. At the end of August cease shading, and also the use of the syringe, giving more air to discourage further growth and ripen up the wood. Keep them through the winter in a moderately light position in a temperature of 68° at night, with a few degrees more during the daytime, but do not allow the soil to ever become so dry as in the case of subjects that produce smaller leaves of a harder texture. By the beginning of March raise the night temperature 5° and 10° with sun-heat during the day, at the same time moving the plants into their blooming pots; these should be 15 in. in diameter, with a couple of inches of crocks in the bottom, covered with fibrous material to prevent the soil being washed down by the large quantities of water which they will want almost daily throughout the growing season. At this potting use the soil in a more lumpy state than formerly, add one-fifth of rotten manure and leaf-mould in equal proportions, and a fair amount of sand. Use the potting lath freely, so as to make the whole moderately solid. The plants should now be placed where they are intended to bloom; if to cover a pillar or rafter, they should at once be trained in such a position. There is no place that they can occupy with more advantage than running lengthways over a pathway in the stove; so placed they economise space that is seldom filled, and are in a good position for their flowers being seen to advantage. Such a situation gives an excellent opportunity for a free use of the syringe, so as to get the water to the leaves on all sides. This is necessary, otherwise red spider is sure to become troublesome. There is nothing better to train the shoots to than thin strings placed 6 in. apart, on each of which allow a single shoot to twine. As the days lengthen, raise the night temperature to 70° or 75°, according to the state of the weather, with 10° more during the day. As the pots get filled with roots, an abundant supply of water will be required. They will now grow apace, and, by the middle of June, will most likely show their flowers, which are produced from the axils of the leaves over a considerable extent of the growing shoots. The plants may either be allowed to go on flowering through the summer where they are growing, or, if desired, the string may be cut, and the shoots wound round several sticks, inserted inside the rim of the pot, or a wide trellis may be used on which to train them. In this way, if wanted, they can be placed for several weeks, whilst the weather is hot, in the conservatory—first preparing them for the change by putting them at the coolest end of the stove, where they will receive more air than where they have been growing. Whilst in a cooler house, keep them well off the openings through which air is admitted; otherwise a check may be given to the advancing flowers that may cause them to fall off before opening. When the blooming is over, remove them back to the stove, placing them at the coolest end, and admitting sufficient air to ripen up the wood, and discourage further growth by giving no more water than is needed to prevent the leaves flagging. Winter in a similar temperature to that before advised, and by the end of February cut the shoots back to within about a yard or 4 ft. of the base of the plant; give a little more heat, and, when the young growth are a few inches in length, turn the plants out of the pots, and remove as much of the old soil as can be got away without injuring the roots; place them in pots 3 in. larger than those they occupied, and treat them in every way through the spring and autumn as recommended for the season previous. Cut them back freely each spring to within a few joints from where they were shortened to the preceding spring, and partially remove the soil at potting-time; they will not need larger pots, but should, through the early part of summer, be freely supplied with manure-water; in this way the plant will last for years. When required to cover a considerable space they may be planted out, but even in this case they should not have too much root-room, or there is no keeping the larger-growing varieties within bounds without having to use the knife so as to seriously interfere with their flowering. The following are all fine kinds which differ considerably in their strength of growth, but all thrive in similar soil, and in other respects require the same treatment:

A. ornithocephala.—This is a native of Brazil; its flowers somewhat resemble a bird's head in shape, and have a pale yellow ground, covered with a network of blackish purple; a very handsome sort, and one which blooms in June and following months; suitable for either pot specimens or rafters.

A. Gigas.—A very strong-growing species, from Guatemala, with a good deal of the flower of a palish purple; blooms in July and August; only suitable for a pillar or rafter.

A. galeata.—A free-growing species from Bogata, with cream-coloured flowers, covered with purple veins.

A. floribùnda.—This is a native of Northern Brazil, from the Amazon district; it is a plant of medium growth, producing a profusion of flowers—in colour, a combination of yellow and reddish purple; it is very suitable for growing as a trained pot specimen, not being too strong and rampant in growth. It is not yet much known, and from the locality it is introduced from may very likely do with less heat than the other species, which would make it doubly valuable as a decorative plant.

Insects.—Aristolochias are not so much troubled with insects as many other stove plants, except red spider, which in hot summer weather will soon injure the leaves and make them unsightly if the plants are not regularly and freely syringed. Brown scale and mealy bug will sometimes make their appearance, but can be removed by sponging and syringing. The yearly heading down also gives an excellent opportunity for washing the stems with a strong solution of insecticide when at rest. T. Baines.

The Harbinger Wallflower.—Plants from seeds of this sown in February, and grown on in pots through the summer, will, by the end of September, be full of flower-buds, and may be had in bloom all through the winter. The colour of the flowers is a fine lively red.—Richard Nisbet, *Aswarby Park*.

THE FLOWER GARDEN.

THE PRIMROSES.

By J. C. NIVEN, Botanic Garden, Hull. Illustrated by F. W. BURBIDGE.

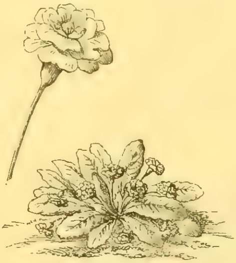
THERE is a charm about a bank of Primroses which no other flower possesses, possibly on account of early associations, and rarely do we find the Primrose unaccompanied by its modest companion, the Violet, whose deep-blue flowers peeping from beneath the foliage every here and there, set off the pure sulphur yellow of the Primrose to increased advantage. But the genus, the principal species of which we purpose passing in descriptive review, appeals to more than early associations. What a wealth of florist industry has in years gone by been devoted to the culture of the Auricula, in its green and grey-edged, as well as Alpine, forms! What extraordinary mixtures of soils are recorded as necessary to form the compost for its proper culture! It is true a lull in the florist's zeal has been for some years manifest as regards the cultivation of this plant; but the mantle of the old veteran, Dr. Horner, appears to have fallen on his son, who, from the heights of Kirby Malzeard, has raised his beacon fire, and issued the watchword of "onward progress." The revival of Auricula culture is sure to extend its influence to its relation the Polyanthus, which, doubtless, after years of neglect—sufficient to make the old standard flowers things of the past—will once again become popular. Nor do these two exhaust the florist's domain; has he not manipulated the old China Primrose from a pale flower deep-notched in every lobe to a glowing crimson, befringed and befrilled with charming irregularity? Nay, more, he has altered the very foliage in shape so much that were the long pinnate-leaved form, now so popular under the title of Fern-leaved—a fresh introduction from the east, it would, doubtless, lay claim to specific individuality. Then, have we not amongst them veritable gems of Alpine beauty, varying in colour and stature from the yellow giant of the Himalayan Mountains and its imperial relative on the mountains of Java, to the happily named P. minima of the snow-line of our Swiss Alps, or the bright-eyed Primrose of our Scottish hills, P. scotica? Where all are so lovely, it would be invidious to make distinctions. Nor is there a single species that is not worthy of a corner on the sunny slopes of the rock-garden; and some are so amenable to cultivation that they will find themselves perfectly at home in the front ranks of the flower border, or even beside the margins of woodland walks. In dealing, from a descriptive point of view, with a genus consisting of nearly 100 species and well-defined varieties, apart from those that have been originated by the hand of the florist, I am sure that it will be at once admitted that it is desirable to divide them into groups or sections.

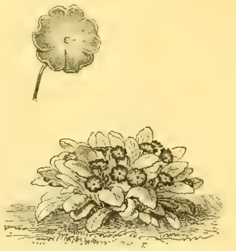
Group **I.—Primroses**, including our Primrose, Oxlip, Cowslip, and Polyanthus.
,, **II.—Auriculas**, which will include all those that in form of leaf, flower, and habit of growth, have an affinity to the well-known Auricula.
,, **III.—The Farinose Section**, which includes all those whose leaves are covered with a mealy substance, and which produce comparatively small flowers.
,, **IV.—The Oval-leaved Section**, containing a limited number of small, but charming plants, with oval leaves.
,, **V.—The Denticulate Section**, with long leaves, toothed at the margin, and producing dense heads of lavender-coloured flowers.
,, **VI.—The Giant Section**, with long green leaves, tall farinaceous peduncles, and yellow flowers (P. Parryi excepted.)
,, **VII.—The Verticillate Section**, to include all those whose flowers are arranged in verticils, or tiers one above another.

Section I.—Primroses.

P. vulgaris.—This is the now recognised botanical name of our old familiar friend, the Primrose; occasionally it may be met with in books under Allioni's specific title of P. acaulis. Its home may be said to be in Eastern Europe, and mainly also in our own British Isles. Any description of it, therefore, will be unnecessary, beyond the passing note that its flowers, if carefully examined, will be found very frequently to originate from an undeveloped stem, so that the name acaulis was not by any means inappropriate. As regards colour, besides the true typical sulphur-yellow, we have mauve in almost every tint, occurring in what may be called a wild state; but wherever I have seen this digression at all pronounced in character I have, with tolerable certainty, traced its origin to some garden source—that is, to hybridity with some of our cultivated garden forms, and usually found that where they occurred there had been a garden in olden time, if not at the place itself, at least in the immediate neighbourhood. Besides these variations in colour, we have many double varieties, such as double yellow, double white, double purple, and double crimson, the latter the rarest of the lot in cultivation. I might here remark that these charming forms that were wont to abound in cottage gardens some years ago are neither as plentiful nor as vigorous in growth as they used to be. I have a sort of suspicion that the two or three consecutive dry seasons, which we had some years ago, and the more efficient drainage of the ground in connection with sanitary improvements have favoured the ravages of the red spider, than which no greater enemy to Primrose culture exists, and that these may in some measure account for their comparative scarceness. Besides these variations, we have in P. vulgaris var. grandiflora (long cultivated as P. altaica, a perfectly distinct species), a plant possessing larger and coarser leaves, and large, deep mauve-coloured flowers so early in spring as almost to claim its position as one of our mid-winter flowers. Added to this, its leaves are produced so early in autumn that by the time it blossoms they have acquired full development, and, as will be seen by the accompanying figure, the combination of leaves and flowers has a very pretty effect.

Common Primrose (P. vulgaris).


Double Primrose.


Coloured Primrose.

P. veris (the Cowslip), so universal in our English meadows, indulges in but few variations beyond that of the colour deepening from yellow into an orange-red; this, in some localities, is not at all infrequent, and my impression is that in this deep-coloured plant we may look for one of the parents of our garden Polyanthus. This conclusion I have come to from noticing that, in a very few years, the common red Cowslip can be arrived at from the Polyanthus by a sort of retrogressive selection, which decidedly requires less care and art than the more generally practised progressive selection.

P. veris var. inflata, though usually given the specific position assigned to it by Lehmann, is, in my opinion, nothing more than a variety with the calyx inflated rather than campanulate. It sometimes goes by the name of P. macrocalyx.

P. elatior (the Oxlip of Jacquin, with the aspect and general habit of the Cowslip), has flowers of a pale yellow, intermediate in size between the latter and the Primrose, which, to my mind, unmistakably indicate the hybrid origin of this plant. This matter, as assumed by me, has, I know, been disputed, the arguments against it being chiefly based upon the fact that, though in this country the two species may be often seen flowering side by side, yet it is rare to meet with the intermediate species. This I at once admit; but, seeing that the very last blooms of the Primrose are passing away as the Cowslip comes into flower, and, further, that these latter flowers have all but abortive sexual organs, the rarity of the hybrid may more easily be accounted for than might have been supposed.

Oxlip.

Cowslip.

P. elatior var. polyantha.—Although I have already hinted that the origin of our garden Polyanthus is more traceable to those deep-coloured forms of the Cowslip than to the Oxlip, yet as it is usually recognised in catalogues as a variety of the latter, I will recognise it as such, as I think it not improbable that its true parentage may be traceable to the combined action of all the three named species, and hence its power of variation. Of this we have several double forms, as well as those varieties known by the popular title of "Hose-in-hose," the latter originating from a simple reduplication of the corolla, and we have also a form, though rarely met with, in which the corolla is absent altogether, and the various parts of the flower become metamorphosed into leaves; this, however, is more interesting from a morphological and botanical than from a horticultural point of view.

P. elatior var.

Section II.—Auriculas.

P. Auricula, or Auricula Ursi of old authors, a name given to it from the supposed resemblance of the leaves to the ear of a bear—a resemblance which, by the way, I have always failed to see—is an old-established favourite, and whether in grey or green-edged forms—which are really of garden origin—or in the true Alpine character, which I take to be the specific type, are alike desirable for cultivation. The variety of colour, and also of the shape and character of the leaves, of a set of seedlings is something astonishing. Some will be smooth-edged and deep shining green, others dusted over like millers, and others, again, crimped along the edge with beautiful regularity. I may mention here as a singular coincidence that three years ago I planted out a lot of seedlings, saved from some selected sorts, in the spring; by the autumn they had become well-established plants, but, strange enough, every one that flowered in the autumn produced either double or semi-double flowers. My readers may guess how very anxiously I looked for the spring flowering, hoping that I had hit on a new strain—the more so as there was a plant of the old double yellow associated with those I saved my seed from; judge of my surprise when I say that in spring there was not even a semi-double one in the lot. Such admirable cultural directions have so recently appeared in your paper from Mr. Horner's pen that I need here do no more than commend this section to the attention of your readers.

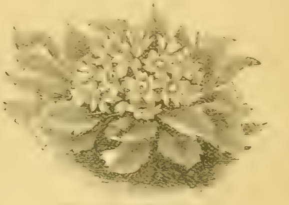
The Auricula.

P. viscosa, of Allioni, is not uncommon in cultivation under the name of P. ciliata, but, as it has the true viscous character much more developed than the ciliated, I prefer adopting the former name. It is a dwarf, compact plant, with dark green leaves, toothed at their margins, broadly obovate, and covered with short glandular hairs; the flowers are produced on short scapes, of a rosy-lavender colour, shading to white towards the eye, which is open—the corolla, in fact, assuming the funnel-shaped rather than the salver-shaped character of the old Auricula. It flowers in April, and is a native of the Alps and Pyrenees.

The viscid Primrose (P. viscosa).

P. viscosa var. intermedia.—A garden hybrid, in which the parentage of the Auricula is readily distinguished by the larger and smoother leaves, and the deep purple colour, with a well-defined white eye. Several other hybrids from the same source are now in cultivation, varying in colour, and notably distinguished from the Auricula by the denser character of the plant.

P. viscosa var. nivea, or, as it is sometimes called, nivalis, is even more dense in habit than the above. The leaves are broadly obovate, distinctly toothed towards the apex, becoming entire towards the base of the spathulate petiole; they are of a light green colour, covered with short villose hairs; the flowers are white, produced in dense clusters on stems usually so short that they appear to nestle in a mass amongst the foliage; they are funnel-shaped, with the marginal line of the corolla prettily undulated. It is a native of Switzerland. This must not be confounded with Fischer's Siberian P. nivea, which is a distinct species that I have never seen in cultivation.


White Alpine Primrose.

P. decora and **pedemontana** are both natives of the Alps; both have their leaves covered with a very short pubescence; in the former they are broadly ovate and distinctly and deeply notched, the terminal lobe being large and pointed; whereas, in the latter, they are almost entire, with the point blunt; both are very dwarf plants, and almost stemless. The colour of the flowers in the former is lavender, and they are produced in limited numbers on a short scape; in the latter, they combine a deep rosy tint along with the lavender, form massive many-flowered scapes, rising from the centre of the leaves to a height of 4 or 5 in. In cultivation, the former appears a much freer grower than the latter, which, however, is decidedly the showier plant of the two. Both are, however, desirable plants, and admirably adapted for inserting in the crevices of a rockery, where a little root moisture can be obtained in hot summer weather.

P. glaucescens, of Moretti, is synonymous with that frequently cultivated as P. calycina; here we have a series of perfectly smooth, entire, broadly ovate, and acuminate leaves of dark green colour, forming a rosette from whence rises a short scape with five or six handsome funnel-shaped blossoms—remarkable for the extreme irregularity of their outline—their colour being a rosy-lilac. It is a native of the Italian Alps, and blooms with us in June. In ordinary cultivation it is of very slow growth and a shy flowerer. Closely allied to this species and differing chiefly in the narrower leaves, and the more bluntly pointed calycine segments is the P. integrifolia of Jacquin, whose flowers, by the way, are of a dark purple, and much more regular in their outline. It is a native of the Mountains of Austria.

P. glaucescens.

P. integrifolia.

P. marginata, of Willdenow, is a plant well marked by the silvery margin that surrounds its ovately cuneate and sharply serrated leaves, as also by the greyish tint of the young leaves, owing to the presence of an abundance of farinaceous matter. The plant has a strong tendency to acquire a caulescent character, the stem rising well above the ground, and marked by the scars of decayed leaves. The flowers are produced freely in April in umbels elevated on scapes, some 3 or 4 in. long, and are of a lavender colour; it is a native of the Dauphiny and also of the Apennines; and although it may prove hardy in a sheltered corner of the rockery, it is not by any means to be depended upon in an open border. If cultivated close to the glass in a cool greenhouse, it forms a charming plant for spring decoration, and ought to be grown for that purpose much more than it is; it is partial to peat soil, and when it acquires the woody character to which I have alluded, it ought to have its branches cut short and inserted round the margin of a pot, rather than that any attempt should be made to bury the older portion. Under the latter conditions, very frequently decay from below takes place.

Laced Primrose (P. marginata).

P. latifolia, of La Peyrouse, as the name would indicate, has broad somewhat pubescent leaves tapering down into a narrow footstalk; it possesses a caulescent character like the last, and is said to have rose-coloured flowers. With me, however, it is a shy grower, and though I have cultivated it for a good number of years, I have had no opportunity of practically forming an acquaintance with its floral character. It is a native of the Pyrenees.

P. minima is one of Linnæus's happy specific titles, as it is here applied to the most diminutive of all the Primroses, so far, at least as stature is concerned. The plant consists of a series of compact rosettes of wedge-shaped leaves, sharply notched at the ends into three or five lobes; the flowers are produced singly, almost sessile, large in proportion to the size of the plant, in fact, fully an inch across, of a very red colour. The limb of the corolla is deeply divided into five segments; these, again, are further notched, though not so deeply, and even the margins of these lobes are still more irregularly notched. It is a native of the highest altitudes on the European Alps, where it is found just below the line of perpetual snow. In cultivation it likes a well-drained gritty soil, and perfect firmness and solidity in the mechanical texture, and, above all things, it requires a watchful eye to guard it from slugs, which in a single night will gouge out the flowering core of each of the rosettes in the most deliberate manner possible.

Fairy Primrose (P. minima).

P. Palinuri, of Petagna.—In this species we have an extreme contrast to the preceding, as here we have the giant of the section, a tree-like Auricula, and one which possesses at the same time a singular resemblance in general contour to the arborescent forms of the Sempervivums. In Naples, its native country—in fact, I believe it takes its name from a Neapolitan promontory known by the title of Palinurus—it acquires the character of quite a diminutive tree; its stem is thick and fleshy, from 1 to 1½ in. in diameter, coarsely marked in the lower portion by the scars of the former foliage, the upper portion being well clothed with fleshy and somewhat leathery leaves, broad towards the apex, and gradually tapering down into a broadly spathulate foot-stalk. The flowers are produced from the apex of a farinaceous peduncle, that is developed from the axil of one of the lower leaves—not from the growing point, as might readily be assumed from the accompanying figure—in considerable numbers, and in varying stages of development, some being quite small buds, while others are fully expanded; the calices in every case are suffused with that mealy matter that we have already recognised as met with in some of our common yellow garden Auriculas. This progressive arrangement of floral development appears to harmonise admirably with the arborescent character of the plant. Though quite capable of enduring the severity of our climate with the protection of a cold frame, and possibly in the southern counties without even that, it ought to be looked upon as a plant worthy of a position in a cool house during the winter, where it will have an opportunity of producing and perfecting its early spring blooms,

P Palinuri.

and as a true arborescent type of the genus Primula, it has an interest whose appreciative value must not be weighed in the balance against more popular beauty.

III.—The Farinose Section.

P. farinosa (popularly known as the Bird's-eye Primrose) is one of those plants that gives a special character to the flora of the north part of Yorkshire, where I have seen it so abundant as to impress its charming pink colour on the surface of acres of mountain meadow, and where it might be gathered by handfuls 12 to 15 in. high. Its leaves are obovate and lanceolate, slightly crenulate, covered with resinous farinose matter, especially when young; the scapes vary in height, from 6 to 15 in., crowned with a dozen or more almost sessile flowers, of a lovely pink colour. The limb of the corolla is expanded, flat, and deeply and acutely notched in its segments. Under cultivation, it likes a soil in which peat predominates; but its growth is rendered more vigorous by the presence of a little loam, almost bordering on yellow clay, and some leaf-soil. One great point in its culture, as well as in that of scores of mountain plants, is to give moisture from below, rather than from above. With a saturated subsoil, they will stand any amount of the hottest sun; but continuous drenching from the watering-pot causes them to rot off at the root, and this, not unfrequently, just as the plants are coming into bloom. The foliage perishes altogether in winter, when a small egg-shaped bud, with usually a few small offsets adhering to it, forms the winter character of this, and all the species in this section. The offsets, if removed just as growth has commenced in March or April, will develop into small flowering plants before autumn. It may also be increased by seeds, which it produces freely. They ought to be sown at once; for, if kept till the following spring, they often remain a twelvemonth in a dormant state.

Bird's-eye Primrose (P. farinosa).

P. farinosa alba and **acaulis** are two varieties; the former, as the name indicates, has white flowers, and is of exceptional occurrence; in the latter, the flower-stem is absent altogether, and the flowers form a dense mass in the centre of the rosette of leaves; this is an essentially distinct variety, peculiar to one or two localities in the North Riding of Yorkshire, where it was discovered some years ago by Mr. Backhouse.

P. scotica, the Scotch Bird's-eye Primrose, is of much smaller stature than the preceding, rarely exceeding 3 or 4 in.; its leaves are broader and more oval, smoother as regards the margin, and rather more densely covered with farinaceous matter; the flowers are smaller, of a deep purple colour, lighted up to intense loveliness by a bright yellow eye. It is a rare Scotch plant, found only in the wild mountain districts of Sutherlandshire and in the Orkney Islands, and is even more lovely than the previous species, of which, by the way, some botanists maintain that it is only a variety, but surely it possesses ample distinctive character, alike in leaf, stem, and flower to claim a true specific title. It is particularly partial to a firm sandy soil intermingled with peat. It occurs elsewhere in Europe besides Scotland.

Scotch Bird's-eye Primrose (P. scotica).

P. auriculata, sometimes called P. magellanica, bears a slight resemblance to farinosa, but it has broader and more undulated leaves, and is more vigorous in growth; the flower-stems are about a foot high, and are terminated by a number of almost sessile flowers; the lobes of the corolla are deeply notched, and much more acute; the colour is combined pink and lilac, with a distinct yellowish blotch on the mouth of the tube; it is a free grower, and is a native of Hungary and Austria.

P. longiflora.

P. intermedia.

P. intermedia or **davurica**, as it is sometimes called, is a tolerably close relation to the preceding, the leaves are, however, smoother in outline; the scapes are shorter, and the flower-heads are more globose in character; it blooms in May, and will thrive well in any sunny corner of the rockery where a layer of peaty soil of some little depth has been previously made. It is a native of Siberia.

P. longiflora, of Allioni (not longifolia, which is a distinct species), brings our farinosa section to a close; its leaves are twice the breadth of those of any of the preceding species—broadly ovate and entire, with slight marginal undulations; the stem is about 8 in. high, terminated by a few flowers of an orange-red colour, which are subtended by foliaceous little bracts; the individual flowers are almost sessile, but separated from one another by the length of the tubes; the lobes of the corolla are widely parted, and each individual lobe is sharply bifid; the leaves, to a small extent, and the stem and bracts are covered with white powdery matter. It blooms in May or June, and is a native of the Swiss Alps, but rarely met with in cultivation.

IV.—The Oval-leaved Section.

P. involucrata, gathered by Captain Munro at a high altitude (11,500 feet) on the Himalayas, where he found it associated with Cyananthus lobatus, has leaves in dense masses, the blades being oval and dark green, with a winged margin running down the sides of the petioles; the flower-stems are about 6 inches high, terminated by three or four white, almost circular, blossoms, suffused with the slightest shade of lilac imaginable; at the base of the flowers are

P. involucrata.

several almost membranous bracts partially united together and reflexed downwards—a peculiarity that I believe belongs to this section alone.

P. involucrata var. Munroi, which has more fleshy leaves with emarginate points and larger growth, possibly may be nothing more than a local variation; both are readily propagated by division, numerous off-sets being formed at the base; they are perfectly hardy, and amenable to cultivation in any ordinary garden soil, the chief care necessary being to guard against their being smothered by ranker adjacent vegetation, as they are very diminutive. They flower both in May and in the autumn.

P. sibirica, of Jacquin, from the Altai Mountains, has oval entire leaves, but the pedicels are longer and more slender; nor does the plant form a dense mass as in the preceding species. The scape is 8 inches high, terminated by five or six nodding rosy-pink flowers, produced in April. This plant I have never seen in cultivation, and it evidently possesses a delicate constitution—at least, such I should infer from the figure in the Bot. Mag.

Siberian Primrose (P. sibirica).

P. norvegica, of Retzius, is the smallest of this group, its slender flower-stem only rising to a height of 2 in., terminated by two or three pretty white flowers tinged with violet; its leaves are oval, light green, and thin in substance, dying off almost before the full development of the flower-stem. It should be grown in pans immersed in water during the growing season, and kept moderately dry when it is at rest. I cultivated it for a few years and bloomed it, but found it a very miffy plant to deal with. It blooms in June, and is a native of Norway and Finland. P. finmarchica is a synonym.

V.—The Denticulate Section.

P. capitata.—This, the gem of this section, has narrowish lanceolate leaves, gradually tapering down to the base; the margin is minutely serrated through its entire length; the back of the leaf is silvery-white, owing to a coating of powdery matter, and the same character applies, in a modified degree, to the upper surface as well; it also forms a dense covering on the scape. This, in a vigorous plant, rises to a height of 10 or 12 in., and is terminated by a dense globose group of numerous small dark purple flowers, so closely arranged as to remind one of some of our Alliums. It was found growing by Dr. Hooker at high altitudes at Lachen, a pass between Sikkim and Thibet. The seeds vegetated freely at Kew, and it was largely distributed, in hopes that some of the recipients might have been successful in seeding it; but, in no instance, I believe, was this success attained, the plants dying off after blooming. By an early removal of the flower-stems, we succeeded in retaining plants alive for three years; but they showed no tendency to increase at the root. I was in hopes that seeds of this lovely plant would have come to hand along with those of Rheum nobile and other Sikkim plants that have recently been re-introduced.

P. denticulata, a native of Silhet and Nepal, and various slightly modified forms, enjoying a wide distribution on the Himalayas, was introduced by Captain Madden and Dr. Royle about the same time; the seeds, however, were collected in two different localities, and gave rise to two distinct types of the same plant. One set, raised at Belfast, had the leaf margin recurved, and the whole plant covered with short down; the other, raised in Edinburgh, had smooth leaves, much and roughly corrugated, the margins irregularly serrated, less vigorous in growth than the Belfast one, and more elegant in its capitate masses of delicate pinky-lilac blooms, which are produced so early in the season that they are liable to be nipped by early spring frosts and cutting east winds; though perfectly hardy, it forms a charming addition to the greenhouse and conservatory during the month of March. I believe that the hairy plant is denticulata of Wallich, who especially alludes to pink fleshy bract-like processes that surround the dormant bud in its hybernatory state; these are scarcely noticeable in the smooth plant. The latter, by the way, I believe to be identical with P. Fortunei, which was sent out some years ago as a Chinese plant. I cannot lay my hands on any description or figure of it; but my plant, which I got from an orthodox source, is, undoubtedly, identical with the smooth-leaved variety of denticulata.

P. denticulata.

P. pulcherrima.—A provisional, but by no means inappropriate, name given to a plant raised by Messrs. Backhouse from seeds sent from the Himalayas as P. denticulata nana. Whether it should be recognised as a distinct species, or as an extremely handsome variety of the old species, may be questionable. To my mind, the more regular distribution of the veins, and the finer marginal denticulations of the leaves, as also the wider separation of the lobes of the corolla and the deep and acute notch in each of the lobes, appear to point out specific characters of some value. My impression is that it is a nearer ally of purpurea than denticulata, and takes a position intermediate between them. Be this as it may, it is a very handsome Primrose, with large, dense globose heads, whose flowers are lavender-coloured at the margin of the corolla, shading centrewards into a soft purple, and finishing off with a pale yellow eye, which encircles the almost closed tube. This, like all the section (P. capitata excepted), likes a good stiff loam, moderately enriched with well-decayed manure. Messrs. Backhouse state that it is perfectly hardy, and that it grows freely with them in either rockery or open border.

P. pulcherrima.

P. purpurea affects somewhat higher localities than denticulata, namely, the sloping sides of the lofty passes of the Himalayas, in the neighbourhood of Gossanthan, where it is associated with such species as petiolaris, elliptica, and Stuarti. Its leaves are larger and coarser than denticulata, with a thick, fleshy, red mid-rib, the margins irregularly denticulated and slightly recurved; its flowers are arranged in flattish globular heads, and are of a light purple colour. It is perfectly hardy, and has the advantage of blooming sufficiently late in the season not to be injured by our spring frosts. Hitherto an exceptionally rare plant, it has been recently raised abundantly from imported seeds, and we may hope to meet with it more frequently than it has been in our gardens and herbaceous borders, where its presence will be highly appreciated.

P. erosa has much the aspect of a diminutive form of denticulata; the leaves, which are slightly broader towards the apex, are irregularly sinuate, so irregular that the mind is impressed with the idea that their margins have been eaten away by snails or other undesirable intruders—hence the specific title; the flowers are pale lavender, supported on stems about 6 or 8 inches high. I take it as a matter of course that it is also a Himalayan plant, though I do not find it described in any of the botanical works I have by me.

P. longifolia, of the Hortus Kewensis, produces a mass of smooth light green, lanceolate, blunt-pointed leaves, of a hard consistency; the mid-rib is fleshy and pink-coloured towards the base; the stem is slightly farinose, and rises to a height of 6 inches; it is terminated by a dense cluster of small rosy flowers. Though not as showy as its Himalayan allies, it is interesting as a representative of the same type occurring on the mountains in Greece, and also on the Caucasian range. It is perfectly hardy, and flowers in May.

P. amœna, of Biebersteim, though introduced some fifty years ago, and recorded as a very handsome species, has long since disappeared from cultivation. Its leaves are long, broadly ovate, or, in fact, obovate, owing to the gradual narrowing of the blade towards the base; its flowers are purple and funnel-shaped, the tube being of a length nearly equalling the width of the corolla; the individual flowers are not sessile but supported on short foot-stalks, and, being developed in succession, not simultaneously, the inflorescence assumes a lax character, as compared with the other species, which we have recognised as belonging to this section. It is a native of the Caucasus, and is recorded as flowering in April and May.

P. erosa.

P. amœna.

VI.—The Giant Section.

P. sikkimensis.—One, and by no means the least valuable, souvenir of Dr. Hooker's botanical sojourn amongst the high mountain passes of the Sikkim Himalayas. This may well be taken as the typical plant of this section, for it is a veritable giant Oxlip. From an underground bud of comparatively small size, with a few radiating roots, reminding one of the North American Dodecatheons, rises a number of upright-growing leaves, oblong and obovate in shape, rugose, and twice serrated at the margins, hairless, and of a bright olive-green; from the centre of these rises a somewhat slender scape, to a height varying from 12 to 30 in., suffused with sulphur-coloured farinose matter, gradually becoming more dense towards the upper part of the stem. The flowers are pendulous, being supported on slender foot-stalks; the calyx is covered with farinose matter, and the corolla, of a pale sulphur-yellow, is wide, expanded, and campanulate, showing little tendency to contract at the mouth of the tube; the bunches of flower, varying in development, remind one irresistibly of bunches of seals of light-coloured African gold. Added to the beauty of the flowers it has the fragrance of the old familiar Cowslip concentrated in the highest degree. Dr. Hooker describes it as growing so abundantly as to give its special tint of colour to the Himalayan slopes at altitudes extending to even 17,000 feet. When growing luxuriantly it is the noblest of all the Primulas, but in order to ensure success it must have ample underground moisture and full exposure to the sun. The finest plants cultivated at Kew were grown in a bed devoted to aquatic plants, with a tank below that could ensure complete saturation and a corresponding perfection of drainage when required. I also remember being charmed with a group of it that occupied a projecting little knoll just raised above the water surface at Messrs. Backhouse's nursery when there were but few plants of it in the country. Recent arrivals of seed from Sikkim will render this valuable plant obtainable by all cultivators of Primulas, and to their notice I would specially recommend it.

Sikkim Primrose (P. sikkimensis).

P. imperialis is, I believe, the only Primula with which we are yet acquainted from the mountains of Java, and it we only know by description. It, however, appears to be equally gigantic in size, with yellow flowers, and certain structural peculiarities that have caused it to be given a distinct generic title. Let us hope we may soon be enabled to form a practical acquaintance with this interesting plant.

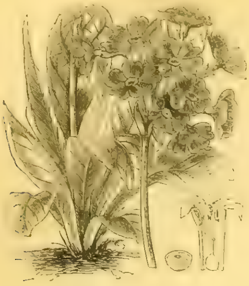
P. Stuarti, of Wallich, has been already alluded to as growing abundantly at Gossanthan along with purpurea and other species. It forms a noble plant, with somewhat fleshy erect leaves fully 12 inches in length, the margin sharply and minutely serrated; the scape is suffused with sulphury farinose matter, and the flowers are of a full canary yellow disposed horizontally; the lobes of the corolla are broad and emarginate, the length of the tube rather exceeding the width of the flower; the mouth of the tube is contracted. I fear much that there is no living plants of it in the country at the present time, unless, by the way, seeds have arrived along with those of the other Sikkim species previously alluded to. It is more than twenty years since I have seen it growing, and as it was a very shy seeder and did not produce off-sets readily, it appeared to be in a fair way for becoming extinct. Wallich, who had not seen P. Sikkimensis, speaks of this species as the most striking of the Himalayan Primulas.

Stuart's Primrose (P. Stuartii, B. M.).

P. luteola is a strong, vigorous-growing species from the Caucasus, with smooth leathery leaves, margined with a series of small serratures, in appearance reminding one of Senecio Doria on a small scale; they are 9 to 12 in. long; the scape grows 12 to 15 in. high, is slightly farinose, and terminated by a dense mass of small yellow flowers. Though this has been some time in cultivation and is decidedly a distinct and well-marked species, I am obliged to plead guilty to a total ignorance of its history beyond the fact that I raised it from seeds some years ago obtained from Berlin. Possibly some of your readers may be able to supplement my remarks with some further information respecting it. It is, at any rate, a free and vigorous grower, and rejoices in a good stiff loamy soil subtended by a cool moist clay bottom.

P. Parryi.—One of the few Primulas that we have in cultivation from the New World; it is we believe a native of the extreme northern parts of the Rocky Mountains, and was first introduced some fifteen years ago by Mr. Thompson, of Ipswich. It is a vigorous grower with smooth broadly obovate leaves of a light green colour; the flower-stem, 9 to 12 in. high, is slightly farinose and terminated by a lax group of medium-sized flowers of a purple colour with a yellow centre. Though I possessed one of the original plants of this species, and kept it for six years, I never succeeded in blooming it; judging from descriptions it must be a very handsome and desirable plant for either rock or border culture. It has recently been reintroduced by Messrs.

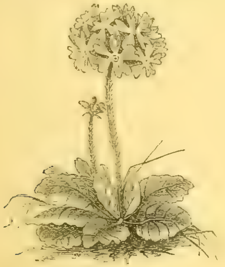
Backhouse, else I question much whether it had not become altogether extinct; with me it appeared to be a shy grower and decidedly disposed to grow less year by year, although I gave it several changes both of soil and situation.



P. Parryi.

VII.—The Verticillate Group.

P. cortusoides, of Linnæus, is an old and well-known plant from Siberia; its leaves are nearly as broad as they are long, lobed and cordate, rugose, rising from a scaly underground bud; the stem is smooth rising to a height of 12 to 16 in., sometimes terminated by a lax cluster of charming pink flowers; the lobes of the corolla are somewhat narrow, but when growing freely the first formed axis is supplemented by a second and even a third tier of flowers. It grows well in any garden soil, but, owing to the fact that it dies down below the surface of the ground in winter, it is liable to be destroyed in the operation of digging. It, however, seeds freely and may in this case be readily increased; it flowers in May and a second time in August or September.

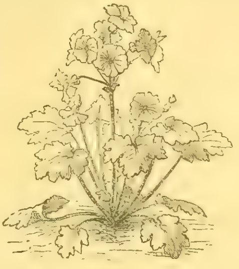


P. cortusoides (B. M.)

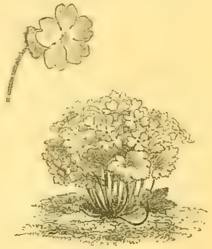
P. cortusoides amœna.—One of the most unhappy names ever given to a plant. In the first place, we have already had described a distinct species under the name of P. amœna. In the second place, I question very much if it be any variation of cortusoides; and being, without exception, one of the finest of all our Primulas, I think it is fully entitled to the honour of a specific distinction. When I saw it bloom for the first time, I christened it P. macrantha. Since that, however, I have come across a very brief description of one called P. Sieboldi, which, as far as it goes, appears to agree with our plant. Possibly, our friend Mr. Baker, of Kew, might be able to clear up this little difficulty for us, as he has done many others. The plant is distinct from cortusoides, especially in its rhizomatous style of growth, in its hairy foliage and stem, in its large pendulous flowers, whose wide expanded limbs are almost campanulate; and in its large calyx. Setting aside all technical description, it is one of the hardiest and most charming of our April and May flowers, varying in colour from pink to crimson, lilac, and white, with a tendency to a toned-down marginal line, and a lighter blotch down the divisional line of each corolline lobe. Thunberg records it as wild in Japan, but rare in its wild state. He, however, says it is largely cultivated; and that, under culture, it assumes many varieties in respect of colour. Possibly the Japanese florists may have manipulated this Primula, the same as ours have done the Fuchsia, Geranium, &c.; but, after all, there is the distinct rhizomatous growth of the underground stem, which ought at least to have a value in descriptive botany. With me, it has never shown any indication of the verticillate character in the arrangement of the flowers; whereas the true cortusoides almost invariably does. Whether the Japanese have brought this plant up to its present state of perfection or not, I would strongly recommend it as an admirable basis for our florists to work upon; and I doubt not that its variations will be, at some future day unlimited.

P. mollis, of Nuttall, is a tender plant from the Bootan range of hills—hills they are called in comparison with the lofty Himalayas, but true mountains they would be were they removed from the immediate neighbourhood of their rivals. This, however, is a singular plant, as there is a certain amount of irregularity in its floral development, which is almost exceptional in the Order Primulaceæ. Its leaves are cordate, and almost palmately-lobed, covered with soft downy hairs, and reflexed at their margins; the flowers are arranged in verticils, and are of a deep rose colour, the stems reaching a height of 12 to 15 in.; the calyx is intensely crimson, acutely divided, the corolla expands at a slight angle with the tube, and the segments are unequal, hence the irregularity I have already alluded to. Though not sufficiently hardy to stand our climate, it is a very desirable greenhouse plant, flowering abundantly in April, May, and June, after which it should be divided and placed in a close cold frame till it has commenced to grow, when it may again be potted into its flowering pots for the succeeding season.

P. sinensis, of Lindley, is synonymous with P. prænitens of Kerr, as figured in the Bot. Reg. I prefer Lindley's name, as we are all so familiar with its popular title, the Chinese Primrose, which it embodies. So familiar, indeed, are we with the plant, and so thoroughly appreciated is it as one of our most useful winter decorative plants, that any description from me is unnecessary; nay, were I to give one in accordance with the original plant, I fear much whether my readers would recognise in it the compact, fringed, highly-coloured, double, and semi-double plants which, thanks to our floricultural friends, have long since superseded the old type introduced in the year 1821. I may, however, remark that there appears to be a doubt as to whether it is really a wild plant in China; at least, a short time back, there were no specimens from any recorded localities in that country in our herbaria; the supposition was that it was a Siberian plant introduced into China and largely cultivated there. Its tenderness will, I fear, militate against this supposition. The original P. sinensis, with its lax growth and verticillate arrangement of flowers, is well represented in the accompanying engraving, as is also the dense form known by the title of erecta, in which the verticillate tendency appears to have been entirely overcome.



P. sinensis.



P. sinensis var.

P. japonica, introduced some years ago by Mr. Bull, is a vigorous-growing plant, with broad obovate and double serrated leaves, fully 12 to 14 in. long, and 4 in. across at the widest part, of a light green colour, with a pinkish mid-rib; from the centre of the large rosette of leaves rises the flowering-stem, producing in succession five or six tiers of flowers, of a deep crimson, and about the same size as those of our Polyanthus, but not so contracted at the mouth of the tube. As regards colour, there are many variations, and possibly this may prove a very useful plant for hybridisation. The large summer leaves gradually die away towards winter, leaving a fleshy bud of considerable size, containing, besides the embryonic leaves, the flower-spike, both of which become fully developed in the following spring. It is a handsome plant; but as, long before the topmost flowers are developed, the lower ones have withered away, the supplemental tiers are not of much value; moreover, its beauty is of but short duration. I believe it is hardy, but liable to decay from the excessive damp which frequently characterises our winters. It seeds freely; but, even if some seeds vegetate the first year, the contents of the seed-pan ought never to be thrown away, as generally the second year produces a more prolific crop than the first. Plants from seed are much more vigorous growers than those produced by a division of the roots; the latter process of increase ought only to be used in the case of some special character as regards colour, that is not likely to be perpetuated by means of the seed.

Japan Primrose (P. japonica).

P. verticillata, of Forskahl, an Arabian traveller and botanist. This is a very distinct species, with smooth, broadly obovate, serrated leaves; the blade decurrent into a tolerably well-defined petiole; the whole slightly diffused with farinose matter, which becomes more developed in the stem, and still more so in the broad foliaceous bracts which immediately subtend the flowers; the bracts decrease in size, and the flowers in number and length of foot-stalks, as the verticils succeed one another, giving the whole plant a pyramidal outline, whose apex, in a fairly vigorously grown specimen, will reach a height of about 12 in. The flowers, which are fragrant, are small, with a well-defined tube of a clear bright yellow colour. Coming, as it does, from the river-sides in the Arabian mountains, as might be naturally expected, it is not hardy, but forms a very pretty plant for greenhouse decoration, under which conditions it blossoms in April or even earlier.

P. verticillata var. abyssinica is a more fully-developed form of the old plant, larger in foliage and flower than the specific type, and far more densely covered with farinaceous matter. As the name indicates, it is a native of the mountains of Abyssinia, where, by the way, we find many of the Arabian plants indigenous.

To the above list might be added many more Primulas from the Caucasus, Siberia, and Turkistan, recently discovered and described by Dr. Regel, as also new species from the Alps; in connection with the origin of some of the latter there appears to be a doubt as to whether hybridisation has not performed an important part. Once the typical specific strain is broken, the variations and vagaries, even in a state of Nature, are endless, but as some of them are only known by dried specimens and equally dry descriptions, and others have only recently made their public appearance, I feel that they are better relegated to some future analyst of the genus, when a more perfect knowledge of their general characters under cultivation will have been ascertained. I cannot conclude this article on Primulas without expressing a hope that some of your contributors who have become familiar with them in their native habitats will kindly supplement my remarks with some of their own culled from Nature's fountain-head. For my part, all I can pretend to do is to record results derived from my own cultural and practical experience, which is what I have done.

Festuca viridis for Edgings.—This is more compact than F. glauca, and makes a better permanent edging; its growth is small and neat, and it needs no trimming except cutting the flower-stems once in the summer. The stronger-growing F. glauca is admirably suited to form edgings in herbaceous, Rose, American, or wild gardens. Its growth is drooping and dense, and it is a much more appropriate plant for the purposes just named than many plants commonly used in that way.—A. D.

Delphinium formosum useful for Cutting.—This is a valuable plant when cut flowers are in request. It comes true from seed, and if sown early flowers the first year. It is, however, most satisfactory treated as a biennial. If the seed be sown during summer good plants are produced by winter, and if planted out as soon as growth commences in spring they yield a constant succession of their beautiful blue spikes during the whole season.—James Groom.

PLATE V.

ÆTHIONEMA GRANDIFLORUM.

Drawn by H. HYDE.

The beautiful Æthionema here figured, drawn from a spray gathered in the Wellington Nurseries last summer, offers an opportunity to enumerate the many beautiful species of the genus, only a few of which are yet in cultivation. The subject of our figure is one of the most beautiful rock plants introduced of late years, forming compact bushes a foot high, and thriving on the level ground even in London. The following account includes the plants sometimes called Iberidella and Eunomia. Although this Cruciferous genus is even now comparatively little known in our gardens, two species, at least, were cultivated in this country about a century ago under the name of Thlaspi; but it was not till 1812 that Robert Brown described Æthionema, in Aiton's "Hortus Kewensis," for the species in question, namely, Æ. saxatile and monospermum. These are both natives of Europe, and by no means so showy as Æ. grandiflorum and several others briefly described below. Subsequent discoveries, chiefly in Asia Minor, Syria, and Persia, have augmented the number of species to about fifty, if we follow Boissier's "Flora Orientalis" for the limits of the genus. Several of them have been raised in botanic and private gardens from time to time, but again lost from neglect or unskilfulness; but now that the culture of Alpine plants is better understood, we may expect the really ornamental species to become more widely diffused. Æ. cepeæfolium and Æ. coridifolium, both very attractive dwarf rock plants, were figured in the "Botanical Magazine" a few years ago; and these, together with the subject of our plate, sufficiently illustrate the ornamental character of the larger-flowered species of the genus. The geographical range of the genus is from the Pyrenees to the Western Himalaya. There are, perhaps, half-a-dozen in Europe, including the beautiful Æ. cepeæfolium, better known as Hutchinsia rotundifolia and cepeæfolia. One only reaches India, where it is found at an elevation of from 12,000 to 16,000 feet, and the remainder are natives of the countries indicated above. Nearly all the species are natives of Alpine regions, and grow naturally in stony or rocky places, and many of them are reported from chalky districts. Æ. pyrenaicum possesses a striking resemblance in habit, foliage, and mode of growth to Polygala vulgaris, and is found associated with such plants as Osyris alba and Passerina dioica. The perennial species will, therefore, require to be kept tolerably dry at the root; a light soil in a well-drained border, or a place in the rock garden, will best suit them. Old plants should be replaced by young ones as often as convenient. These may be raised from seed or cuttings, which is better done in a cool frame or pit. The annual species, excepting Æ. Buxbaumii, are not, so far as we know, in cultivation. In habit and foliage Æthionemas, especially the half shrubby species, have very much the aspect of some of the woody Candytufts, but the petals are all equal in size. The seed-vessel seems to afford the best character by which the species may be distinguished. This is usually, more or less, broadly winged, as in Thlaspi and the Shepherd's Purse, but the wings are usually concave, not flat, forming a boat-shaped seed-vessel. The margin of the wings, too, is often toothed or fringed. The flower-spikes are usually very dense, and the seed-vessel relatively large, and very much crowded, so that in some species, as Æ. Buxbaumii, they bear some resemblance to the catkins of the common Hop. The flowers are usually some tint of red or lilac, or combination of the two. A few species have yellow flowers, and there are white-flowered varieties of several species. About fifty species are known, all natives of the mountains of Europe, Asia Minor, Syria, and Persia.

Section I.

1.—Leaves auricled at the base, or hastate.

† Sub-shrubby Perennials.

1. **Æ. cepeæfolium** (Bot. Mag., t. 5749, under Iberidella; Hutchinsia rotundifolia, Hort. Kew., Edition 2, Vol. IV., p. 82).—A densely-tufted, more or less glaucous-green, glabrous barb, with a long perennial tap root, that burrows deeply amongst stones. Stems, 3 to 6 in. long, ascending; leaves, mostly opposite, small, fleshy, one-third to three-quarters of an inch long, those from the root

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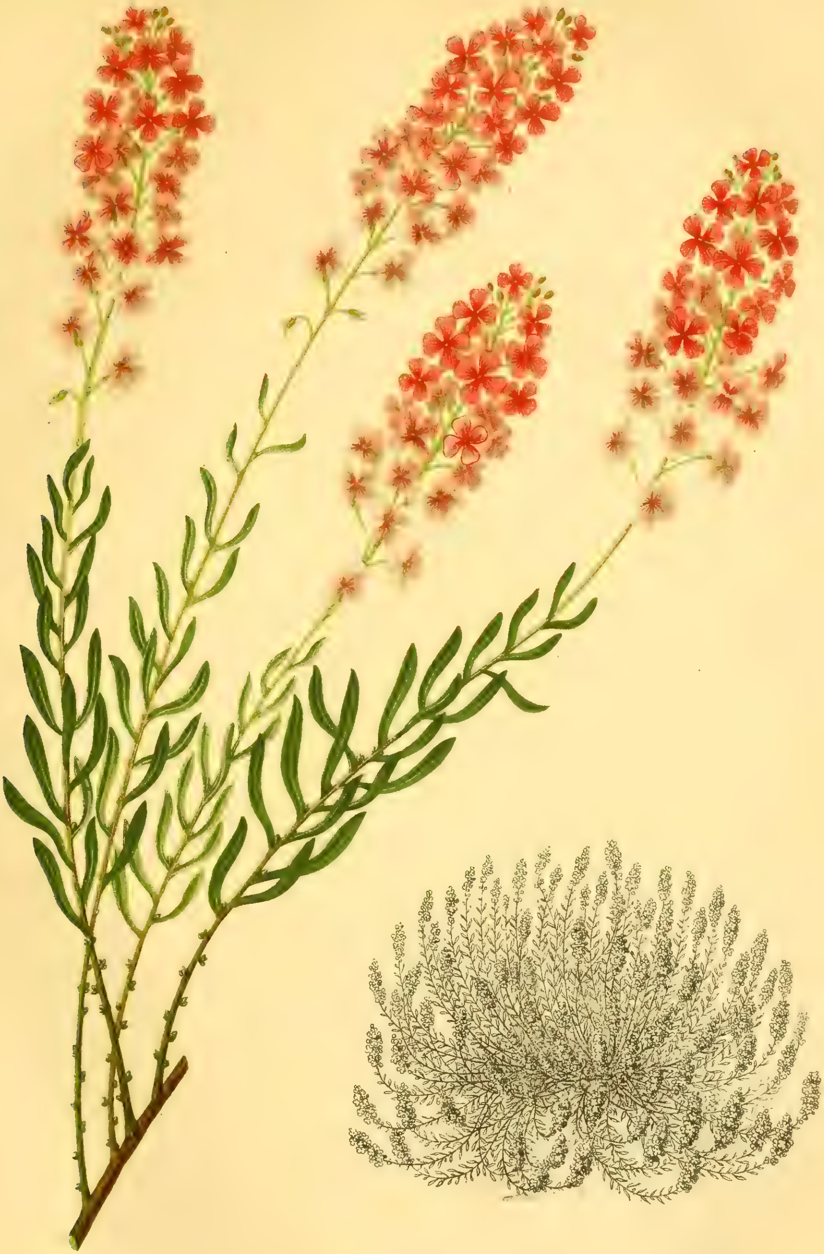


BUSH ÆTHIONEMA. (Æ GRANDIFLORUM.)

broadly obovate or almost orbicular, quite entire, or obscurely toothed, those on the stem sessile, obtuse, or auricled at the base; flowers, half-an-inch in diameter, in cylindrical, crowded, erect racemes, pale lilac with a yellow eye; pedicels, horizontal. A native of the Alps of Europe, where it is widely dispersed, and abundant in many parts of Switzerland. It is found at an elevation ranging from 6,000 to 9,000 feet. This is certainly one of the finest species of the genus. It was first introduced about 1759, and again recently; the plate in the Bot. Mag. appeared in 1859. There is a white-flowered variety of this in Kew Herbarium. As there is another Æ. rotundifolium, we adopt here the name of cepeæfolium.

2. **Æ. trinervium.**—Leaves, hard, more or less distinctly three-nerved, oblong or narrowly lanceolate, the lower ones narrowed at the base, upper ones obtusely heart-shaped and stem-clasping. Flowers, rather large, white, seed-vessel oblong linear, rounded or truncate at the top, crowned with the equally long style. Mountains of Persia. There is a variety of this species, called ovalifolium, with broader ovate-oblong leaves. It is a native of Armenia.

3. **Æ. sagittatum.**—Leaves, rigid, many-nerved, oblong, or lanceolate, deeply hastate at the base, with acute lobes; flowers, rather large, white; seed-vessel, oblong, narrowed at the base. Persia.

†† Tufted perennials.

Æ. tenue heterophyllum and cæspitosum are dwarf, densely-tufted Alpine species, with small white or pink flowers. The only Indian species, Æ. Andersoni, also belongs to this group. It is a diminutive plant, with white or pink flowers.

4. **Æ. rubescens.**—Leaves, alternate, obovate; flowers, large, rose: seed-vessel, elliptical, tapering at both ends. A native of the Alpine summits of the Sicilian Taurus, &c., at an elevation of 11,800 feet. This is a very showy species, exceedingly like Æ. rotundifolia.

5. **Æ. Bourgæi.**—Leaves, opposite, obovate; flowers, large, rose; seed-vessel, oblong-elliptical, rounded at both ends. Found in stony places in the Alpine region of Mount Akdagh, Syria. Differs chiefly from the last in its opposite leaves.

Section II.

1.—Perennial, tufted with slender little stems; leaves, opposite, orbicular, fleshy (Eunomias of De Candolle).

6. **Æ. chloræfolium** (Iberis, of Sibthorp & Smith).—Leaves, slightly papillose and scabrid at the margin; flowers, rather large; petals, obovate, rose, much longer than the calyx. A native of Asia Minor.

7. **Æ. oppositifolium.**—Margin of the leaves naked otherwise, very similar to the last. A native of he summit of Mount Lebanon.

8. **Æ. rotundifolium.**—Very near Æ. oppositifolium, differing chiefly in the shape of the seed-vessel, and the panicle being free instead of adnate to the seed. A native of stony places in the Western Caucasus. This is quite different from Iberidella rotundifolia, described under Section I.

2.—Sub-shrubby perennials.

† Seed-vessel, one-celled and one-seeded.

9. **Æ. thesiifolium.**—Stems, tall, slender, and twiggy; leaves, long, narrow, lanceolate, upper ones, acute; flowers in an elongating raceme pink. A native of stony places in the mountains of Pisidia and Cappadocia. This is the only ornamental species of this sub-section. It grows about 18 inches high, has long narrow leaves, and large flesh-coloured flowers, elegantly marked with purple. The other species are:—Æ. elongatum, Szowitsii, and stenopterum, all natives of Persia.

†† Seed-vessel, two-celled; cells, one-seeded.

10. **Æ. grandiflorum.**—Branches, long, slender, simple, about 1 foot high; leaves, oblong-linear, rather obtuse; flowers, purple, as large as those of Arabis alpina; petals, four times as long as the sepals. A native of Mount Elbrus in North Persia; discovered by Hohenacker in 1843, and subsequently collected by Haussknecht, in Kurdistan, at an elevation of 4,000 feet in 1857.

11. **Æ. pulchellum** (Æ. coridifolium, of Botanic Gardens, not of De Candolle).—Similar to the last, of which it was formerly considered a variety; but it is a more diffuse plant, having smaller flowers, the petals being about two-and-a-half times as long as the sepals. A native of Armenia, Pontias, Persia, and Kurdistan.

12. **Æ. membranaceum.**—Stems, erect, simple, about 6 in. high; leaves, oblong-linear, smaller than those of the two preceding. The seed-vessel of these three species is very broadly winged, and the wings are entire, or very slightly toothed, at the margin. A native of Persia; formerly in cultivation in this country, and figured in Sweet's "Flower Garden." It is much less showy than either 10 or 11.

13. **Æ. diastrophis** (Diastrophis cristata).—In habit, foliage, and flower, this comes very near to Æ. pulchellum, but it differs from that and others of this sub-section in its very long fruiting racemes and small seed-vessel with elegantly toothed wings. It is a native of Russian Armenia, and was in cultivation at Dorpat in 1841, and Paris in 1851, as specimens in Kew Herbarium testify.

14. **Æ. armenum.**—This, judging from dried specimens, although smaller-flowered than its immediate allies, must be a very pretty species when growing. It is of dwarfer (3 or 4 in. high), more diffuse habit, with more leafy stems and dense spikes of small purplish-rose flowers; seed-vessel, crenate. It inhabits the mountains of Armenia, Cappadocia, &c., growing in stony places.

15. **Æ. coridifolium.**—Stems, numerous, thick, only a few inches high; leaves, crowded, short, linear-oblong, or linear-obtuse, or somewhat acute; flowers, large, but not equalling those of Æ. grandiflorum; seed-vessel, boat-shaped. This handsome species is a native of the chalky summits of the Lebanon and Taurus, and was figured in the Bot. Mag. a few years ago, t. 5952.

16. **Æ. capitatum.**—This species, of about the same stature as the last, but with longer stems and more scattered leaves, is remarkable for its short dense fruiting heads of boat-shaped seed-vessels with entire wings; the flowers are small and inconspicuous. Alpine region of Cappadocia.

17. **Æ. speciosum.**—A densely-tufted species with ovate-oblong leaves, and rather large rose-pink flowers; seed-vessel elegantly toothed, and tinged with purple. A native of Armenia, and not yet introduced. It is described as one of the prettiest of the genus, growing in dense tufts 3 to 4 in. high, and producing a profusion of large flowers. Æ. lignosum, subulatum, stylosum, lacerum, and fimbriatum belong to the same group. They have rather small flowers, but in all of them the seed-vessel is very elegant. The three last have broad, ovate, or ovate-lanceolate, glaucous, somewhat fleshy, leaves.

††† Seed-vessel, two-celled; cells, one-seeded.

18. **Æ. cordiophyllum.**—Stems, few, rigid, densely leafy; leaves, rigid, quite sessile, deltoid-cordate, the lobes embracing the stem, the lower ones opposite; flowers, rose-pink, of medium size; boat-shaped seed-vessel, toothed. A native of Armenia, &c. This plant grows from 6 to 12 in. high, with leaves very similar to, but smaller than, those of Polygala cordata.

19. **Æ. cordatum.**—Stems, few, rigid, densely-leafy; leaves, sessile, deltoid-cordate, acute; flowers, rather large, sulphur-yellow. A native of dry, rocky places in the Alpine region of Armenia, Syria, &c. It is similar to the last, but differs in its larger yellow flowers, and less distinctly toothed seed-vessel.

20. **Æ. salmasianum.**—This is also a yellow-flowered species, and is very near the last, but it has heteromorphous leaves, and the wings of the seed-vessel are entire. Persia; found growing in stony places in the province of Aderbidjan.

21. **Æ. moricandianum.**—Stems, few, short, and leafy; leaves, all opposite, nearly sessile, ovate, obtuse, the upper ones sometimes cordate at the base; flowers, large, yellow. A native of Mount Caira, where it was discovered by Cinard in 1843. This species comes very near to Æ. cordatum, differing in its obtuse leaves, which are all opposite and scarcely cordate, and in its flowers, which are twice as large, equalling those of Arabis alpina.

3.—Perennial, but often flowering only once; seed-vessel, two-celled; cells, two and three seeded.

22. **Æ. græcum.**—Stems, numerous, short; leaves, crowded, very small, ovate-oblong; flowers, rather large, similar to those of the European Æ. saxatile, but twice as large. A native of the chalky mountains of Greece, &c. There are several others of this group, as Æ. saxatile, gracile, ovalifolium, monospermum, and pyrenaicum, but none of them are very showy, though all are pretty.

4. Annuals.—Seed-vessel, two-celled; cells, two or three-seeded or one-celled and one-seeded; fruiting spikes, very dense, often proliferous from the top.

23. **Æ. cristatum.**—Lower leaves, ovate or oblong petiolate, those on the stem sessile, cordate, and rather acute; flowers, very small rose or white; wings of the densely-crowded seed-vessels deeply jagged and toothed. This species is widely dispersed, from Armenia and Syria to Affghanistan, growing in a great variety of soils and situations. This group, to which Æ. heterocarpum Buxbaumii and campylopterum belong, is more remarkable for the fruiting spike than the flowers of its species. Æ. Buxbaumii was introduced in 1823, and is occasionally seen in botanic gardens.

Taking a selection of the species described above, the following are among the most ornamental—Æ. cepeæfolium, coridifolium, grandiflorum, speciosum, moricandianum, and cordatum.

W. B. Hemsley.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Striking Cuttings.—Amateurs, in their first attempts at propagating, are often at a loss how to proceed. The question is, therefore, frequently asked, "In what condition should the shoots be of which the cuttings are made?" To this question no positive answer can be given, inasmuch as cuttings of one particular kind of plant may strike best in a comparatively soft state, while those of another may require to be made of better-ripened wood. For instance, cuttings of Pelargoniums, although comparatively quick-growing plants, should be made of tolerably well-ripened wood, or they are liable to rot, whereas many plants are indifferent as to whether the wood is soft or hard; but, in the latter case, the after-growth is never so free or rapid as when the cuttings were younger and softer. The necessity of, in all cases, as far as possible, selecting shoots for cuttings in the right condition as to ripeness, will, therefore, be obvious. For all such plants as Fuchsias, Heliotropes, Verbenas, Petunias, Lobelias, Ageratums, and Lantanas, that are usually struck in winter and early in spring, the cuttings should consist of quite young soft shoots, taken off with two or three joints, according to the strength of the individual shoot. In most cases it is best to sever the shoot immediately below a joint, which should form the base of the cutting; although there are some plants, such as Verbenas and Lobelias, that will emit roots freely from any part of the stem. A joint at the bottom is, however, to be preferred. The soft young shoots of Dahlias, for example, taken off when about 6 in. long, with a joint at the base, strike root readily. Azaleas, Bouvardias, Acacias, Genistas, Daphnes, and Cassia corymbosa strike best from cuttings made when the wood is about half ripe—that is, when the current year's shoots have attained nearly their full thickness, but are not more than half matured. Hydrangeas and Oleanders root freely, when the shoots are young and comparatively soft, or when the growth is approaching maturity with the buds formed in the autumn. Cuttings of Lasiandras, Kalosanthes, and Pleromas strike readily from half-matured shoots. Amongst plants that require stove-heat in which to grow, such as Allamandas, Aralias, Dipladenias, Jasminums, Bougainvilleas, Euphorbias, Aphelandras, Poinsettias, Aristolochias, Passifloras, Clerodendrons, Crotons, Cyanophyllums, Cyrtoceras reflexum, Franciscеas, Plumbago rosea, Sericographis Ghiesbreghtii, and Sphærogynes, all root freest when made of young shoots from 6 to 8 inches in length taken off with a heel—that is, with the firm portion of the bottom of the shoot, at its juncture with the old wood, attached to them. Many plants, difficult to strike, will root with very few losses in the shape of cuttings taken off in this way, provided they are severed from the plant with a thoroughly sharp knife, that will make a clean cut, without in any way bruising the bark. Tabernæmontanas, Stephanotis, Rondeletias, Pentas carnea, Meyenias, Medinillas, Ixoras, Hoyas, Gardenias, Eranthemums, Centradenias, and Æschynanthus readily root from half-ripened shoots. The above are some of the plants grown under glass, in the propagation of which amateurs are most likely to experiment, and with which, after a little practice and observation, they will be most likely to succeed. It is, however, in all cases, necessary to bear in mind that when a cutting is severed from the plant that has produced it, the source from which it hitherto has been sustained is at once cut off, and that, until roots are formed, it is necessary to keep the soil continually moister than would be required in the case of a growing plant of the same species. This holds good with all plants that are not of a very succulent character; these, if the soil be kept wet before the cuttings have become calloused, are liable to rot. In order to diminish the loss by evaporation in cuttings two expedients are resorted to, viz., removal of a portion of the leaves and enclosure of the cuttings under propagation-glasses or close frames, together with shading from sunshine; but, although it is necessary to thus surround cuttings of most plants with a confined moist atmosphere until they have formed roots, care must be taken that the air in which they are confined is not kept too close and moist, or they will damp off. To prevent this the glasses or frames should every day be slightly raised according to the state of the weather and time of the year; in dark dull weather, when the days are short, the lights will bear tilting more than would be advisable when the season is further advanced and when there is more sunlight. As much air may always be safely given to cuttings as they will bear without causing the leaves to flag; this refers to almost all plants that amateurs are likely to attempt propagating. Pelargoniums form an exception, inasmuch as they do best uncovered by glasses or propagating frames. As to temperature it will usually be found that cuttings of all plants require as much heat to induce a free production of roots as that to which they are subject in their native country during the growing season. In the selection of cuttings generally from plants of all descriptions, weak shoots should be avoided; these, even under the best treatment, in the after stages of their existence, can rarely be made to equal such as are stout and freer in growth. The stronger the cutting, as a rule, the stronger the plant. On the other hand, gross over-vigorous shoots should not be chosen, as these are liable to damp off. There is another matter of importance in the propagation of plants of all kinds, and that is, they ought as far as possible to be potted off as soon as they are well rooted, for if numbers of cuttings be struck in one pot or pan, and then allowed to remain for some time after they are rooted, the roots get interlaced to such an extent as to cause serious breakage in getting them asunder; and if allowed to stay long in the cutting-pot, they do not receive sustenance sufficient to keep them in a healthy growing state, consequently they become stunted, the result of which is that a considerable time elapses after they are potted off before they can be induced to grow, and in many cases they can never be got to make good plants.

Greenhouses.

Pelargoniums of both the large-leaved and fancy kinds that had the points of their shoots pinched out some time back, and have since broken, should now receive a shift into pots to suit the size and vigour of the plants. Pelargoniums delight in a good, rich, unctuous loam, that has been cut from an old pasture and laid up for a time so as to destroy the herbage; and, where this can be obtained, there is no difficulty in growing them to perfection. In potting, ram the soil into the pots around the old ball as firmly as possible, using a properly-prepared flat piece of wood for the purpose; and, in doing so, great care must be taken that the tender roots surrounding the ball do not become bruised or injured. In the case of old plants that have been cut back, it often occurs that the young shoots become too crowded to admit of all being retained, and, therefore, any that are weak or can be spared should be cut out to afford the necessary light and room to the others so that they do not become drawn. Any shoots of sufficient length to admit of being trained should be drawn down so as to make the frame of the plant as large as possible. A few pegs made of small galvanised wire answer the purpose admirably, or a strand of matting run round the pot just below the rim for the purpose of threading other pieces through with which to tie down the branches, will answer for all purposes of training at present. See that aphides do not effect a footing on them, or they will soon disfigure the plants and cripple their growth. When potted place them on shelves or in some other favourable position where they can enjoy plenty of light and sunshine. Spot, that fatal enemy to the health of Pelargoniums, is generally brought on through the plants being placed in unsuitable positions, where they get an insufficiency of light and warmth, accompanied by too damp an atmosphere. A temperature of 45° by night should therefore be maintained to do them well, which may be allowed to rise to 55° or so when the days are bright and clear, so that a little air may be admitted. In doing so, at all times avoid cold draughts and cutting winds. Calceolarias, both shrubby and herbaceous, can scarcely have the atmosphere too damp, and it is therefore difficult to treat them in the same house with Pelargoniums and other things requiring a drier atmosphere. Where this cannot be done, place them in positions where they can have the syringe drawn lightly over them without interfering with the other occupants of the house. Herbaceous Calceolarias should never become pot-bound or receive a check in any way. Keep them steadily growing on by shifting into fresh pots as they require it, using a somewhat lighter soil than that advised for Pelargoniums, and potting them less firmly than the latter require. Old plants of the shrubby varieties, such as Kayii and others, taken up and saved from the borders, make very showy useful plants when potted and nursed on through the winter. Almost any damp pit or frame will suit these, and they are sure to be acceptable when laden with their rich heads of bloom. Old plants of Fuchsias should now be placed in any forcing-house at work, or where they can get a gentle moist heat for the purpose of starting them into growth to get a supply of cuttings, and induce the plants to form fine heads for early bloom. Shake out and re-pot the moment they break, and place them in a good light position where they can be well syringed and enjoy a temperature varying from 45° to 55°, according to the state of the weather. Young plants struck in the autumn should be shifted on as they require it, never allowing them to become pot-bound so as to check their growth. Nip out the points of the leading shoots to induce the buds to start regularly up the stems so as to make well-furnished symmetrical plants. Fuchsias delight in good fibry loam, well enriched with the refuse from old Mushroom beds, or any cow manure that has been laid up a long time and got well decomposed. A little of either of the above well mixed in with the soil will keep it properly open, and induce them to make a rapid and vigorous growth. Pots of Lilies should at once be overhauled before they advance further into growth, or there will be much difficulty in handling them without breaking either the young shoots or large fleshy roots. Remove as much of the old soil as can be done without breaking or disturbing these, using a sharp-pointed stick for the purpose. The soil above and immediately surrounding the bulbs should be all taken away and renewed. Unless there is a large increase in the number of bulbs, the same sized pots will in most cases be large enough, as they will have nearly all fresh soil to grow in, and auratum appears to do best when somewhat pinched as to pot-room. Drain well, as they take a deal of water when growing freely, and throw a handful of soot amongst the crocks to keep out worms, as these do much damage by getting between the scales of the bulbs. To obviate this, and keep the bulbs sound and clean, scatter some sharp sand over them before covering with soil. Leave 3 inches or so of the pot unfilled that the stems may have some rough lumps of soil placed round them while growing, as these emit roots just above the bulb. In potting, use good rough lumps of loam and fibry peat in about equal proportions, and do not press this in too firmly, as all large fleshy-rooted plants like moderately loose rough soil into which they can penetrate; and the quantity of water that has to be freely used then passes quickly through. Use the soil in a moderately moist state; and after potting, place them where they are not likely to dry, so as to obviate the necessity of having to give water till active growth commences.

Forcing House.

Almost anything in the way of bloom is sure to be acceptable at this early season, and there are many of the hardy early-flowering shrubs that may soon be induced to unfold their buds by introducing them to a gentle moist heat. Among the most effective of these are the early-blooming Rhododendrons and Azaleas, and a good stock of each of these should be kept up where early flowers are at all in demand, as there are few things that tend to make a house so gay, or that can be used with such good effect. The hardy Azaleas exhale such a sweet perfume that a house can be scarcely overdone with them; and there is nothing more serviceable or acceptable in the cut-flower vase than a few sprigs of these. Small shapely plants of Berberis Darwinii and stenophylla are valuable for early forcing, and make a fine display when the gracefully-drooping branches are laden with their pretty bell-shaped flowers. Even the Laurustinus, when trained so as to form nice heads, either in the bush or standard form, are valuable at this season for decorating large conservatories, halls, &c., where they may be made to do good service, instead of risking things more choice. A very little heat will soon bring on the Eupatoriums; and by keeping others as cool as possible, the season of blooming may be greatly prolonged. E. Weinmannianum, on account of its nice smooth shiny-looking foliage and strong perfume, is the most desirable variety to grow; and, as it can be had in bloom much earlier than riparium, it is sure to become a favourite. These, and the Spiræa japonica, while growing and blooming, can scarce have too much water; and the latter may, with advantage, be stood in shallow pans, as their roots absorb a good deal of water when confined in small pots, and if allowed to become dry, the flowers soon suffer. Solomon's Seal (Polygonatum) is a valuable subject for forcing, especially for cut flowers, as the beauty of any vase is greatly enhanced by adding a few sprays of this, where its delicately-tinted green leaves and snowy white blooms are only rivalled by those of the Lily of the Valley. Clumps of the latter should be lifted while the weather is open, so as to be in readiness when wanted. Leaves of these are almost as valuable when forced early as the flowers themselves, as they are sure to be in request for cutting; and, if the clumps contain a fair per-centage of flowering crowns, they had better be left undisturbed, as what there are will bloom better than if torn to pieces to separate them. All plants for forcing should, if possible, be housed, or placed under cover of some kind, as, when that is done, they come slowly on, and require much less forcing. Where this cannot be done with the hardier things, such as Rhododendrons, Kalmias, &c., the pots should be plunged in leaves, and the stems of the plants protected by thrusting plenty of dry Bracken or litter amongst them. Any deciduous things, such as Weigelas, Lilacs, Azaleas, and such like, together with Dielytras, Lilies of the Valley, Spiræas, &c., may be placed and be brought forward a stage in any close shed by giving them a syringing occasionally. Look closely to Hyacinths, Tulips, and other bulbs in pots that are buried beneath coal ashes or other material, to see that they do not become too forward, or the leaves and embryo blooms will suffer injury. When removing them, see that they are not subjected to light too suddenly, as that is sure to cause the tender, blanched leaves to turn brown at the tips, and thus spoil the appearance of the plants. An inverted pot, placed over each bulb for a few days, or by keeping them close in a frame with a mat over for a short time, will prevent this. Introduce a few at a time into gentle heat as wanted; and if the pots can be plunged so as to keep the soil uniformly moist without having to water, the bulbs will be all the better for it. A few greenhouse Azaleas may now be introduced into gentle heat, selecting any well-known early bloomers for that purpose. Give time, maintain plenty of atmospheric moisture, and force slowly. Take advantage of every gleam of sunshine so as to save fires as much as possible. It is a too common practice to give air too freely when the sun makes its appearance, instead of anticipating its presence by slackening or wholly stopping the fires, and allowing the sun to do their work, which it will in a more satisfactory way. The air of warm houses is being constantly changed through the laps of the glass and other crevices, and therefore but little provision need be made for doing so in any other way at this early season, as it is only a waste, and brings in a lot of cold air that chills the tender leaves of plants subjected to early forcing. As flowers of forced plants open, keep them well up to the light, so as to give substance and render them more enduring.

Hardy and Half-hardy Fernery.

No place is complete without an appendage of this kind, as here many shade and moisture-loving plants can be accommodated and find a suitable home, that could not be successfully treated elsewhere. Where plants of doubtful hardiness are being tried, they should have ample protection afforded them by placing a sufficient quantity of Cocoa fibre, old tan, sawdust, or, perhaps best of all, some fresh dry leaves round them. Over these, some Bracken should be laid to prevent them from blowing away and exposing the plant. The utmost vigilance must be exercised to see that none of the protection afforded becomes displaced by birds in quest of food, or that the plants do not become disturbed or destroyed by rats or mice, that often make sad havoc among them in sharp weather when covered up. Such plants as Palms, Dracæna australis, Aspidistras, or others of that class, associate well amongst out-door Ferns, and are sufficiently hardy to stand ordinary winters with only slight protection, such as that mentioned above. In no case, however, should things of doubtful hardiness be experimented on or turned out till the spring of the year, so that they may make and harden their growth in the position allotted them. When the time arrives I hope to touch on a few Ferns and other plants that may be ventured out with tolerable safety. Except for such hardy strong-growing Ferns as Struthiopteris, Lastreas, Onocleas, Osmundas, and others, planting had better be deferred for some time longer, and even with these nothing is gained, as they make but little, if any, root, till they begin to grow. —J. SHEPPARD, *Woolverstone Park.*

Indoor Fruit Department.

Vines.—The past season has not been at all favourable for the ripening of late Grapes. In Durham, the rainfall has been above the average, and outside borders have had too much wet. Where such has been the case, and the borders have only been protected from frost by means of manure, let the latter, if in quantity, be wholly removed; but if only a thin layer, let it be shaken up to dry. Examine also the main drain in front of the border, in order to see that it is in good working order; pinch out all laterals in early houses, so as to avoid overcrowding. Where the fruit is thin and swelling, keep up a brisk heat by day, admitting air cautiously; indeed, in old or wide-glassed houses, little will be required. In houses not so forward, but where young shoots are pushing freely, advance the night temperature to 65°, leaving a little front air on when the weather is favourable. Disbud all to one shoot from an eye, leaving the strongest, which invariably furnishes the finest bunches; if very strong, be careful in tying them down, as they will scarcely bear their own weight. Stop them at two or three leaves beyond the fruit. Late houses in which only a few bunches remain should be pruned, cutting and placing the clusters left in bottles of water, so as to allow the house to be cleaned and put in readiness for starting afresh. Where it is intended to bud or graft an old Vine, let it be done near the bottom, and leave the side-shoot on which the graft or bud is to be put its full length, inserting the eye near its extremity, where it will start quicker than when placed close to the old Vine. Thus managed, the rafter should be refurnished in a season, if all goes well.

Pines.—In houses in which the latter fruit-bearing plants still remain, they had better be got together, or taken to a smaller house where proper attention can be given them. If moved to another house, they must be re-plunged immediately, for, if allowed to stand without bottom-heat at this season, the fruit will cease to swell, and a premature finish will be the result. Have the house for succession plants thoroughly cleaned, if not painted, the bottom-heat looked to, and fresh tan supplied, if necessary, ready to receive the plants from which next winter's fruits are to be cut. Suckers, rooted in 6 and 8-in. pots last September, and subjected to a bottom-heat of 75° or 80° through the winter, will have well filled their pots with roots, and should now be potted into 11-in. pots, with a view to growing them on briskly for four months. When rested after that for a month or six weeks, they will readily show fruit, and, as a rule, produce the best winter crops, Queens excepted. See that plants in early houses do not suffer from drought; but, if the soil be moist throughout, it is not advisable to use much water until they show fruit. Admit air on all favourable occasions; but shut up early in the afternoon, so as to take advantage of sun-heat. Sprinkle all available surfaces; but avoid the use of the syringe amongst the plants at this dull season. Maintain a night temperature of from 65° to 70°, with a corresponding rise of 10° by day.—J. Hunter.

Kitchen Garden.

A systematic rotation of crops should, if possible, be adopted in every kitchen garden, especially where manure is scarce, in order that the first or direct supply of it may be given to such vegetables as require the richest food; for this reason, notes as to the cropping of the various quarters each season should be kept on a plan of the garden. The following rotation has answered well on our light soil here, viz., on south borders and in other warm situations. First crop, early Potatoes; second, same season, French Beans; afterwards, Lettuces to stand the winter. Second season, early spring-sown Cauliflower, and then deeply worked and manured for the November sowing of Peas. The open quarters are cropped as follows; first, Potatoes, Broccoli, Celery, Peas, winter Spinach, Carrots, Onions, and Cabbage. Another rotation is Potatoes, Brussels Sprouts, Celery, Parsnips, Scarlet, French, and Broad Beans, Turnips, Savoy, and Broccoli. Occasionally it may be advisable to vary these rotations, but as a rule they may be adopted with safety. Parsnips and Onions require a long season, and the sooner they are sown now, the better, *i.e.*, if the ground be in a fit state for the reception of the seed. Parsnips enjoy deep tilth, and if manure be added, it should be placed at the bottom of the trench; sow the hollow-crowned variety in drills 15 inches apart, and cover to the depth of 1 inch. The ground for Onions should be somewhat firm, and if not so naturally, tread or roll it, previous to which apply a surface-dressing of either soot, lime, or wood-ashes, the three mixed together being best; sow the seed also in drills half-an-inch deep and 12 inches asunder, cover by hand, and again tread or roll the ground, in order to ensure the seed being made firm in the soil. The best varieties are Reading, or White Spanish, Blood Red, and James' Keeping. A good breadth of Potatoes may now be planted, selecting the sets from such as have been laid thinly on shelves, or in shallow boxes of soil, to sprout; draw drills for them at least 9 inches deep and 2 feet apart, and set the Potatoes firmly 1 foot from each other in the row. Care should be taken not to break off or injure the sprouts, and not more than two should be left on each set. The best early varieties are the Old Ashleaf, Veitch's Improved Ashleaf, Early Market, and Early American Rose. Jerusalem Artichokes may also now be planted, and as they make a large amount of top growth and shade all the crops near them, it is advisable to grow them in some out-of-the-way corner. Any situation or aspect will suit them, provided the soil be moderately rich. The rows should be at least a yard apart, and the sets 18 inches asunder; they will then grow up strong enough to resist any ordinary gale of wind. Rhubarb plantations should now be manured and dug, and, where necessary, new ones made; for, if left on the same ground too long, it deteriorates both in quality and quantity. The old stools should be split up into single crowns and planted a yard apart, and if not pulled from during the summer these will make the finest roots for forcing next winter. For the latter purpose Johnston's St. Martin is the best; and, for out-door growth, Myatt's Victoria. Should the earliest-sown Peas be likely to prove a failure, which often happens, lose no time in sowing again. A week, perhaps, may be gained by sowing in heat on strips of turf and planting them out when a couple of inches high. This mode entails a good deal of labour for very little profit; but, where labour is plentiful, I recommend it to be done as follows:—Cut turfs into convenient lengths, 2 inches thick and 3 or 4 wide, turn the Grass side downwards, and cut a small furrow along the centre; in this sow the Peas and cover them with sifted leaf-mould or fine soil, keep in heat until they are well through the soil, and then move them to a cold pit or frame; plant them out as soon as the roots protrude through the turf, protecting them well with evergreen branches from cutting winds and sharp frosts. Broad Beans may be sown, and treated in a similar manner. Give abundance of air to Lettuce, Endive, and Cauliflower plants in frame, sow a boxful of Early London Cauliflower in heat, to succeed the plants now in frames. Lettuce, Brussels Sprouts, and a first sowing of Celery should also be made forthwith in heat. Keep up successional supplies of Asparagus by making a fresh bed fortnightly. A crop of Radishes may be had by thinly sowing over the Asparagus; and Lettuce and Cauliflower plants can be raised in the same way. —W. Wildsmith, *Heckfield*.

PRESERVATION OF COLOURED PLATES.

As, doubtless, our subscribers desire to preserve The Garden coloured plates in as good condition as possible, we venture to offer the following directions for that purpose, furnished by one of our artists, who has paid much attention to the subject, which is one of some importance to all who possess water-coloured drawings or chromo prints, and who wish to preserve them. Exposure to sunlight and damp are the two great sources of decay in coloured plates; if they be placed in the full glare of the sun or in strong reflected light, they will fade in time, the paper become discoloured, and all that gave pleasure to the eye will disappear. This, too, will take place, even when they are "framed and glazed," certain red colours fading first. In order to obviate the evil, all prints should be kept in a drawer or portfolio, or more conveniently in their proper place between the leaves of The Garden, until they can be bound into a volume, taking care to avoid the second source of decay, viz., damp, which is quite as destructive and more insidious than sunlight. It makes its presence known by dulling the brilliancy of the colours and spotting or discolouring the paper, especially at the edges; dark spots become visible in the light parts, and light spots in the dark parts. This evil is much increased by mounting the prints for framing, &c., with bad paste. When the numbers of The Garden are delivered to subscribers, they are, of necessity in a slightly damp condition; therefore the plates should be removed, the body of the work itself should be dried by the fire, or in any convenient manner, and the pictures should be returned to their proper places; do not, however, dry the plates themselves by the fire. When the numbers are not in use, place them in a drawer, or altogether in any dry place at hand, where they will be easy of access for reference. When the volume is returned by the binder, it is usually in a damp state, and if allowed to continue in that condition, fading of the colours will follow. It is well, therefore, to open it, and expose it in several parts to gentle heat, or to place slightly warm blotting paper between the leaves in several places; then close the volume, and place others on it, or use any other means for drying the leaves that may suggest themselves, but do not place the volume near a fire or in the direct rays of the sun. If it be in use, turning the leaves over is the best possible mode of drying them. In framing the plates of The Garden, let the glass be gummed or pasted to the frame, place them in "sunk mounts," hang them out of strong light, and protect them from damp by placing, in addition to the usual precautions, patent painted cloth at the back. Applying varnish or gelatine to the face of the plates is useless. By adopting these precautions water-colour pictures may be preserved from injury, but, besides sunlight and damp, other evils, though of a smaller kind, present themselves. When The Garden is forwarded by post, the coloured plate often gets creased and crumpled. This may be remedied by placing it between one or two sheets of clean damp paper for a short time, and pressing it flat under a weight laid on some protection between it and the print; remove the plate when it has become damp or limp, place it upon two or three sheets of very dry clean paper, face downwards, and put over it two or three other sheets of similar paper, and over all a large book, and more books on that to act as weights. In this way it will become quite flat in two or three hours, or it may be removed from the damp papers and placed at once between the leaves of a large book under a weight. If the edges be slightly torn or frayed, use the scissors very sparingly, or it will not bind up well. H. Hyde.

Dangerous Fungi.—The Agaricus personatus, one of our common so-called edible fungi, formerly sold in Covent Garden Market, and even now exposed for sale in the market of Nottingham under the name of "Blue Hats," has, according to Mr. Berkeley, been supposed to be occasionally dangerous. Mr. W. G. Smith has recently had sent him from Yorkshire (Hovingham) some typical specimens of this fungus, with the information that the "keeper" had gathered a dish of it and cooked it for the table, with the result that soon after taking it the whole party—himself, family, and friends—were seized with vomiting and pain in the pit of the stomach. From this it would seem that the fungus is really at times dangerous, and should be eaten with caution. Mr. Berkeley has since confirmed this. He states that some years ago the late Professor Henslow sent a quantity of Mushrooms, consisting entirely of this species, which formed part of a basketful of which some persons in Cambridge had partaken, and had died in consequence. As A. personatus has not only the reputation of being wholesome, but is sold in some of our markets, it was supposed that some deleterious species had been mixed with the others, and had proved fatal. It would seem, however, he says, from this additional information, that he was wrong. It is, however, pretty certain that species which are in general wholesome occasionally contain such a portion of their peculiar alkaloid as to be dangerous.—"Florist."

THE FRUIT GARDEN.

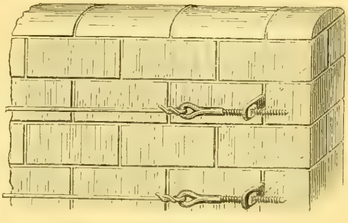
CLEARING VINES OF MEALY BUG.

When Vines are leafless and at rest is the best time for this kind of work. In the first place, every crack or crevice in the walls must be stopped, either with mortar or cement—the latter is best; then they should be washed over with lime-wash, made rather thick. All painted surfaces, such as rafters, sash-bars, sills, doors, &c. should also be well scrubbed with a brush, using a strong solution of soft soap or Gishurst Compound for the purpose. About 8 ounces, dissolved in a gallon of water, and used when warm, will destroy any insect with which the solution comes in contact. The Vines should then have all loose bark removed, and be washed in the same way, avoiding doing any injury to the buds. If the lights can be taken off and the house thoroughly painted, all the better, as the insects often hide themselves in cracks between the lights and rafters, where they may be overlooked or where, at least, it is difficult to reach them. Where this cannot be done, or where the roof is a fixture, every crack should either be filled up with putty, or Gishurst Compound Paste should be rubbed into every place where the brush and solution could not penetrate. The Vines should then be painted with the following mixture:—Dissolve 1 pound of Gishurst Compound in 2 gallons of water; then add 2 pounds of sulphur, and sufficient lime and soot to bring the mixture to the consistency of thin paint, making the colour light or dark by adding lime or soot as desired. When cleaning and painting the Vines, the earth for some distance round the stems should be removed down to the roots, in order to destroy any insects that may have buried themselves round the stem underground. It will be advisable also to remove 6 in. of the soil from the inside borders, and to substitute good fresh loam. This I should do even if a few roots had to be sacrificed. If when the Vines are started a hot-bed of leaves and dung could be made on the inside borders and occasionally turned over, it would have a beneficial influence upon the Vines, and at the same time tend to keep down insects. Even after all this has been done, and well done too, it is just possible that eggs or larvæ may have been left somewhere; in fact, when once established, it is a rare occurrence for one dressing to destroy every insect, but by care and watchfulness during the following spring they may be entirely got rid of. Even up to the time when the Grapes are fit for thinning, a daily examination should be made from the ground up to the top of the house. About 11 o'clock in the morning, the insects, if any be present, will generally be found on the main-stems, within a few feet of the ground, in which a few eggs or larvæ may have been left. A few minutes each day devoted to looking over a large house are sufficient; and, when once a Vinery is cleared of this pest, particular care should be taken not again to allow it a footing, as it is impossible for Vines or Peaches to be infested with it, without the appearance of the fruit being spoiled. It is useless, however, to attempt remedial measures, unless plants suspected to be infested with mealy bug can be kept out of the houses devoted to fruit culture. H.

Gros Colman Grape.—There has been a good deal of inquiry lately concerning the keeping and other qualities of this Grape. I saw it lately at Drumlanrig Castle in the most perfect condition—superb examples both in bunch and berry; the flavour, too, was excellent. Mr. Thomson considers it one of the very best late Grapes we have. The Vines at Drumlanrig are marvels of vigour. Though only making a start—all having been re-planted since the Phylloxera attacked the former ones—they were heavily cropped, nearly 6 ft. of young wood having been left at pruning time; and we believe some of the bunches sent to dessert from supernumeraries weighed 12 lbs. The Gros Colman seemed to run from 3 to 5 lbs., but some of the finest bunches had been sent away, before I saw them, for a special occasion.—S. W.

Charles Downing on the Yellow and Green Newtown Pippin Apples.—I can only say in my young days—some fifty or sixty years ago—these Apples were always considered as two distinct kinds. As to their origin and history none has been given that I am aware of, except that the Newtown Pippin is said to have originated in Newtown, Long Island, but whether a chance seedling, or raised by some person, is not stated. Coxe, in his work on Fruits, states that one is a variety (seedling) of the other. The Fall Pippin, Rhode Island Greening, Tompkins County King, and many other kinds, have no origin assigned them, but does this prove that there are no such varieties? The yellow Newtown Pippin is the Albemarle Pippin of Virginia. It is said that the bark and growth of the two kinds are alike, which is true when young, but with age, the yellow variety makes a much larger and more spreading tree than the green kinds. The fruit of the yellow variety is yellow soon after being gathered, while the green is always green until spring, when it changes to a greenish-yellow; the yellow has a shade of brownish-red, and sometimes spots or blotches of red on the sunny side; the green seldom or never has any red on it; the form of the yellow kind is oblate, oblique, slightly conical, while the green sort is oblate, slightly conical, and in well-grown specimens regular, but in smaller ones more or less angular; the flesh of the yellow kind is quite firm, breaking, juicy, rich and aromatic, while that of the green sort is crisp, or brittle, tender, very juicy, rich and aromatic. As to the two varieties being found on the same tree, it reminds me of a remark made by a celebrated pomologist, viz, that he could select twelve Apples from a Rhode Island Greening, which any fruit committee would decide to be twelve different kinds, so you may select both yellow and green Newtown Pippins from the same tree, but the general crop of the yellow variety will be yellow, and so of the green. I doubt if the matter will ever be settled to the satisfaction of all.

Wire Strainers.—The accompanying illustration represents a neat and useful mode of straining galvanised wires on walls by means of screws and nuts, the fittings connected with which can be readily fixed by any ordinary workman. It is used by Messrs. Reynolds and Co., of Soho Square. The most convenient distances for fixing wires on brick walls are found to be 6, 9, or 12 in. apart. The terminal holdfasts are driven into a cross joint at the end of a brick, and where 6 or 12 in. spaces are adopted, they form a vertical line from top to bottom of the wall; but if the space chosen be 9 in., the holdfasts must be placed half a brick in or out of a vertical line. The eyes through which the wires run should be driven into cross joints about 10 ft. apart. The Raidisseur or strainer is attached to one of the terminal holdfasts by a small bolt and nut supplied with it. Where straining screws of this kind are adopted, the best plan is to use one at each terminal holdfast.—H. S.



Mode of Straining Wires on Walls.

Frost in Valleys.—More than thirty years ago we urged the importance of not planting tender fruit trees, such as the Peach, at the bottom of valleys, where the cold air settles, and where the warmth in summer and autumn promotes a more succulent and tender growth than elsewhere. But it appears that even now some are slow to believe it. It appears that some have attributed the greater cold indicated in valleys to the variation in thermometers. Ten thermometers were accordingly procured. On low ground they went down to 9° below zero; on being removed only 11 feet higher to a small ridge, all rose to 8°. Higher points showed greater differences. We have known Peach buds to be wholly destroyed at the bottom of a hollow; while 60 ft. higher, and out of the lake of cold air, the trees bloomed profusely.—"The Cultivator."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Autumn-Fruiting Raspberries.—I am desirous of purchasing some autumn-fruiting Raspberries, and now write in the hope that amongst your numerous readers I may hear of some one able to supply me with them. I have tried several nurserymen, but without success.—T. J. Carter, Rackham, The Grove, Catton, near Norwich.

Cox's Orange Pippin in Devon.—We have recently seen some beautiful specimens of this Apple, grown by Mr. Garland, of Killerton. Some of them measure 10 in. round. These fine fruit, however, have now lost their high flavour, and, probably could not, in keeping, compete with smaller fruit of the same kind from midland localities. Of these a few specimens are yet obtainable in the market.

ORCHARDS AND THEIR CULTURE.

By an orchard I mean an enclosure entirely devoted to the culture of the larger fruits, such as the Apple, Plum, Pear, Cherry, and occasionally the Medlar, Mulberry, and Quince. The three latter, however, are grown more for ornament and curiosity than for use, and, where they are required, one or two of each sort will be found sufficient for even a large establishment. The Cherry is rarely a profitable orchard crop in woodland districts, on account of the prevalence of small birds, which destroy the produce; but a judicious selection of the hardier Plums may be rendered sources of remuneration. In most gardens of importance, many of our best Pears are either cultivated as wall trees or as pyramids, and undergo a regular system of summer and winter pruning; but many of the finest-flavoured Pears are found to succeed quite as well in the form of standards or ordinary orchard trees. Selecting trees for an orchard is a matter that requires careful consideration, and the site should be such as possesses a suitable soil and climate. Where the fruit is grown for market (and supposing we are planting 500 Apples, instead of planting 100 sorts, all of different growth and coming in at different periods) I would plant 50 or 100 of a sort well known to succeed in that particular locality. When they are grown for private consumption the selection should be made with a view of prolonging the season as much as possible. Some of those Apples found to succeed in the northern counties and north of the Tweed do not succeed so well south of the Trent, and the same is the case with regard to Pears. Some that succeed as standards, and are considered valuable for their richness of flavour in the north, are comparatively useless in the south, but our southern neighbours have a corresponding advantage, for in the north many of the valuable fruits that are so popular in the south do not come to perfection. Most of our Plums will succeed as standards in ordinary localities and situations; in fact, where the common Gooseberry will thrive and bear fruit, there will the Plum prosper, and an orchard will not be complete without several Cherries of the Mayduke, Bigarreau, and Morello section, if there be any chance of their escaping the ravages of the birds. The first consideration in the formation of an orchard is to properly prepare the ground. I would here advise the inexperienced planter to provide in the first place against excess of moisture, for no good fruit culture can be carried out where stagnation exists. I must not here confound mere retentiveness in a surface-soil with a wet and sour subsoil. The draining of the one, and the mere improvement of the mechanical texture of the other, are, of course, two operations essentially different. When drains are necessary, they should seldom be less than 3½ or 4 ft. deep, with provision for their proper discharge. Where there is the choice of situation, the site should be a gentle slope to the south-west; and the soil, when one of that character can be secured, should be a deep loam, rather tenacious, resting on a dry subsoil—if strong, all the better. We cannot always command situations suited to individual wants, but unfavourable ones may be somewhat improved. Locality has much to do with the success of the fruit crop, and over this we have little or no control. It may be asked what has made Hereford and Devon such fruit-growing districts? It cannot be soil alone, it cannot be in the planting or after-culture, but it must be atmospheric influence. The fact of the matter is that whatever efforts may have been made in other counties—and doubtless many have been made both by the present and past generations—yet these two counties, Hereford and Devon, still stand ununrivalled for fruits. With regard to the improvement of any given situation, we all know that thorough drainage in wet localities will accomplish wonders. Whatever be the character of the soil, it will be essential to trench it deeply, and to work into it at the same time a quantity of strong farm-yard manure. In planting, avoid that higgledy-piggledy, off-hand style too often met with in orchards attached to country houses. If an orchard be worth planting at all it should be done well, especially at the commencement. The trees should be planted in rows, abutting north-east and south-west, or north and south, so that the sun may shine between the rows during the warmest portion of the day. Unless it was desirable to keep the Pears as pyramids, and let them undergo a regular system of summer and winter pruning, we should plant all standards on straight stems, 5 or 6 ft. high. The distance to plant them apart should be 10 ft. row from row, and 10 ft. asunder in the rows. In the course of twelve or fifteen years, if the soil be good and the trees have prospered, they will almost touch each other, when every alternate row may be removed. If it be in contemplation to form a fresh orchard, every tree that has to be removed should be properly root-pruned during the winter previous to removal, and then they will move with perfect safety, and soon come into bearing condition in their new quarters. In three or four years more every alternate tree may be removed, leaving the permanent trees 20 feet from each other every way. By this time they should be well-developed trees, with the branches spreading in all directions, and nearly occupying all the ground. Where the land is at all inclined to be wet, the trees should be planted on slightly-raised mounds, but if the drainage be made good, or the soil be of a light character, this will be unnecessary. At the time of planting it would be of great benefit to give each tree two barrow-loads of fresh soil, say the parings from the sides of lanes, or anything that is fresh and full of fibre. This is much better than placing rotten manure in contact with the roots, for it encourages the emission of young fibres, and produces a better quality of wood. For two or three years after planting half of the space between each row may be cropped with Potatoes, dwarf Kidney Beans, or Spinach, but it must be a crop that does not root deeply. After that the whole of the ground should be left uncropped. In the course of a few years the ground may be sown with grass seeds, but the trees should have a good start at first. For a year or two they will require mulching with rotten manure, which should be occasionally renewed. During the first year after planting give the trees plenty of water, and pour it over the mulching material. Respecting the time for planting fruit trees there is but one opinion. The best time in the whole year for planting all trees that shed their leaves in winter, whether fruit-bearing or otherwise, is from the end of October to the end of November. They may, in fact, be planted with success from October to the beginning of March, but they are best planted as soon after the leaves change colour as possible. The chief reason why planting should be performed as early after the leaves turn yellow as possible is that the earth is then warm. Fifteen inches below the surface it will be found to be 8° or 10° warmer in October than it is in January or February, so that the mutilated roots are, comparatively speaking, placed in a gentle bottom-heat, which rapidly promotes the growth of fresh fibres before the earth gets cooled down by frost. By early autumn-planting the trees are, to a great extent, established before the dry winds of spring set in, and are capable of breaking into vegetation with greater vigour than those planted later in the season. When planting, choose a dry time for the purpose, if possible. Care must be taken to spread the roots out in all directions, and in as straight lines as possible. In neighbourhoods where rabbits and hares abound they are almost sure to bark the trees in hard weather. To prevent this they are sometimes painted with various compositions, but whatever is applied in a liquid state must be renewed once or twice during the winter, or it will lose its effect. The best and most effectual remedy, however, is to wrap a piece of galvanised wire netting loosely round the stem of each tree to a height of 3 ft., a plan which will effectually prevent injury from ground game, and the wire will last many years. Q. R.

THE ROOF TREE AT KNEBWORTH.

" Read the Rede of this Old Roof Tree,
Here be trust fast. Opinion free.
Knightly Right Hand. Christian knee.
Worth in all. Wit in some.
Laughter open. Slander dumb.
Hearth where rooted friendships grow,
Safe as altar even to foe.
And the sparks that upwards go
When the hearth-flame dies below,
If thy sap in them may be
Fear no winter, Old Roof Tree." —Lord Lytton.

THE INDOOR GARDEN.

CUTTING BACK CAMELLIAS.

Camellias which have been allowed to grow for many years without pruning or training, often require to be cut back freely. Plants needing this treatment are seldom in a robust state of health, and the few flowers which they produce not only lack size and fulness, but generally decay and drop prematurely, an evil which does not apply to old plants only, but also to comparatively young ones. When such plants are furnished with plenty of strong active roots, their long leafless branches should be cut back to about half their length as soon as they have done blooming; but it must be borne in mind that to cut plants down when the roots have not power to produce growth quickly is productive of more harm than good. In the case of tall plants, the first thing needful is to have plenty of roots, and, where these do not exist, re-potting should take place without disturbing the top, until the roots have been got into a healthy growing state. Where the roots are good, even old plants may be cut well in; but in general it is safest to cut back part of the branches one year and the remainder the following season. After Camellias have been cut down they should be placed in a temperature of 60°, in order to induce them to start again into growth. The atmosphere should be kept moist, and the tops of the plants should be syringed at least twice daily. When the young shoots have grown 2 or 3 inches in length, the plants may be removed into a light airy house where the air is not saturated with moisture; but while breaking it is of much importance to have the wood constantly moist; and in cases in which it is very old and hard, a little Sphagnum or other kind of Moss thinly spread out and tied round the branches facilitates the production of fresh buds. Plants which fail to perfect buds or blooms should be cut down at once, and placed under growing conditions such as those just described; and if all goes on well the young wood formed now will bear blooms about this time next year or probably earlier. Camellias which are planted out are not in general so leggy as those in pots; but even these, if large and bare, may be cut down prior to being started into growth, and if they can have a little more warmth than is given to conservatory inmates generally for a month or two, all the better. The growths will be found to need tender treatment for a time, and to be shaded from strong sunshine, but when hardened off a little the more light they get the better. Frequent syringings during the hot summer weather serve to keep down red spider and other insects.

J. Muir.

LEAN-TO GREENHOUSES, HEATED BY FLUES.

My small suburban garden has not the open space necessary for a span-roofed greenhouse, without sacrificing many well-established fruit trees and shrubs, while there is ample room in a sunny corner for a lean-to house; but the account given of such structures in your last number (see p. 60) makes me hesitate about erecting one for general use, although the back wall for it, facing W.S.W., is already built, and a flue inserted about 8 ft. from the north end of the wall. Do you consider the circumstances justify the erection of a lean-to? If so, I should be glad of any suggestions tending to mitigate the inherent defects of this form of house and the liability of the flue to crack. Would it be better to build right in the corner and have one end of the house brick, or build more in the middle, so as to have glass at both ends?—8. [If "S." has no place to which he can remove his fruit trees and shrubs that occupy the site which he would devote to his span-roofed greenhouse, and he values them more than what he intends growing in his proposed house, there is then no resource except putting up a lean-to house. Could not a span-roofed house be built with one end abutting on the wall against which he proposes to erect the lean-to house? The importance of securing the greatest possible amount of light for both plants and fruits grown under glass cannot be over-rated, and therefore unless the existing wall be a divisional one that cannot be touched, might it not be lowered so as to form one side of the span-roofed house? If neither of these suggestions can be carried out, "S." need not, however, despair of succeeding with a lean-to, although flowering-plants grown in this description of house are seldom or never so satisfactory as in a span-roofed one. By all means keep as far away as possible from the corner mentioned, and if possible have glass at both ends. As to flues, instead of being built in the ordinary way with the bricks on edge, you should have them laid flat; in this way the flue is not quite so soon warm, but it retains the heat absorbed by it correspondingly longer, and is much less likely to leak; let it be at least 9 in. wide inside and 1 ft. or more deep, according to the width of the house; the larger the flue the more heat it will give off, diminishing the necessity for making it over-hot, and consequently reducing the quantity of fuel required. See that good mortar is used in its construction, and that the bricks are well laid; bed the covers in hair mortar, and lay a strip of hoop iron, 1 in. wide, across under each joint of the covers. This will keep the mortar from dropping out, and prevent the escape of smoke. Build the furnace altogether outside the house, and make it large enough to hold a good body of fuel, so as to last for eight or ten hours without attention; for a small house, 16 in. deep by 12 in. wide and 20 in. in length will not be too large. Sink it low enough, so that the flue may rise a little as it enters the house, and continue to do so all the way round until it enters the chimney-shaft. Do not let the flue dip at any point; if it cross a path or doorway, let it be got over by means of steps. A flue with a dip rarely draws well. The internal arrangement of stages will depend upon the size and description of plants to be grown on them. T. Baines.

Myosotis dissitiflora Indoors.—This beautiful Forget-me-not promises to bloom early this year, as its minute buds are already becoming apparent. Should the weather remain open, I anticipate that we shall have it in good bloom by the end of February. For pot-culture it is best to lift and pot up the plants just before the buds begin to expand, as if kept long under glass before blooming, they are subject to two evils—damping-off and greenfly. Plants lifted and placed in an airy house push rapidly into flower, and remain objects of beauty for several weeks. I am surprised that this pretty flower is not largely grown for the London market, and especially for window-boxes. A carpet of it for boxes of white or red Hyacinths or Tulips would greatly enhance their beauty.—A.D.

Culture of Ixoras.—Judging by the description given by "J. P." (see p. 56) of the way in which Ixoras grow in the open air at Bangalore, it might be supposed by those who have not had practical experience in their cultivation under glass, that the amount of humidity in both soil and atmosphere which I recommend is unnecessary. There are, however, some conditions under which a plant may exist, even in its native habitat, that would often be found anything but advisable to imitate in artificial cultivation, under which these and similar plants must be considered to be in this country. When the atmosphere of the house in which they are grown is kept dry, the flowers and leaves are always small and puny.—T. Baines.

Orchids in Bloom at the Victoria Nursery.—The following Orchids are now in flower here, viz:—Cattleya Trianæ striata and other varieties, C. Chcoensis, C. Warcewiczii delicata and aurantiaca, and C. Russelliana; Cælogyne cristata; Calanthe Turneri, and the white and yellow-eyed varieties of vestita, and C. Veitchii; Cypripedium Bulleni, C. barbatum, C. Harrisianum, C. Dayanum, and C. villosum; Colax jugosus; Dendrobium nobile, D. crassinode, and D. japonicum; Helcia sanguinolenta; Lælia albida; Lycaste Skinneri, L. delicatissima, L. rosea, and L. grandiflora; Miltonia cuneata; Masdevallia ignea, M. polysticha, and M. Lindeni; Odontoglossum blandum, O. cariniferum, O. membranaceum, and O. stellatum.—B. S. Williams.

Hepaticas in Pots.—For the next few weeks, no one who has to furnish a supply of cut flowers, or who wishes to have pretty flowers for house or window decoration, should be without a few strong plants of diverse kinds of Hepatica in bloom. Among small hardy early spring flowers, few make up so prettily for button-holes, or for small bouquets; and along with them may be used a few blooms of Queen Victoria Violets to give perfume. Strong established plants, in pots, will flower earlier than similar plants in the open border; and, at a time when all kinds of flowers are scarce, it is well to have some under glass, as they are thus kept from rain and frost, and preserve their freshness and beauty for a long time. Hepaticas are impatient of frequent removal, and when once established in 6-in. or 7-in. pots, they should be occasionally top-dressed; but not too often re-potted; the greatest check, however, is given when a plant has so increased in size as to render division necessary, but if such plants be not required to make stock for sale, it is best to divide sparingly, say into three or four divisions, and these if re-potted at once soon become re-established. Small plants should be potted into 60-sized pots, and in these they may remain the first year, plunged in ashes in a shady situation for the summer. The next year they may be shifted into pots a size larger, and so on until a size sufficiently large for them is reached. If kept cool, free from weeds and worms, and liberally supplied with water, so that plenty of foliage is formed, a fine head of bloom will be the result. The most suitable sorts are the Single White, Blue and Red, the Double Red and Blue, and the well-known pale blue Angulosa.—A. D.

Thunbergia Harrissii.—This, though seldom seen in cultivation, is nevertheless, when well grown, one of our best flowering evergreen stove climbers. It is by no means difficult to manage, and when in bloom at this time of the year, besides being ornamental in the house in which it is grown, it assists in filling the cut-flower basket. Its greatest enemy is red spider, but with proper drainage and liberal supplies of water when growing, both at the root and in the shape of daily syringings, this can be easily kept in check. Like most other climbers, it grows best when planted out in a well-drained border, consisting of rough fibry loam, leaf-mould, and a little sand and charcoal, all well mixed together. The back wall of our plant-stove is faced with soil kept up by wire net-work, and covered with Lycopodium denticulatum, and on the top, within 6 inches of the glass, we planted the Thunbergia and several other creepers, and trained them to wires that run across the house. Thus treated they have grown well, and several of them, such as Ipomæa Horsfalliæ, Euphorbia Jacquiniæflora, are now in flower. The creeping Fern, Lygodium scandens, runs up the wires, and when carefully trained, we can easily cut from it long pieces which, drooping gracefully from épergnes, have a pretty appearance.—A. H., *Thoresby Park.*

Culture for Transport.—M. Rivière, in Algeria, is growing Palms and other tropical plants in very small pots, to secure economy in transport. The pots are not more than a few inches—3 to 5—across, and, in some cases, the diameter of the base of the stem of the plant is nearly as great as that of the pot. The pots are plunged in the open ground, which is constantly moistened by small rivulets. The roots enter the earth through the bases of the pots, but these are removed from time to time, to prevent their rooting too strongly in it. The method reminds us of a similar one pursued in the Mauritius, where young Palms and like plants are raised in pots formed of pieces of Bamboo stem. In these, we have received consignments of valuable plants from the Mauritius, with scarcely any loss.

Want of Chlorophyl in Seedlings from Variegated Plants.—M. Lemoine states that "out of some 3,000 seedlings of Phormium Colensoi, all of which came up yellow, only about 100 remained alive, and that he expects these will soon wither away and die." On the other hand, M. Rougier says, that although all his seedlings of this Flax are also yellow, yet some of them seem healthy and look as if they would live; but, as far as his experience hitherto goes, they have little or no chance of doing so. I may add that similar results have occurred in the case of seedlings from the variegated Fatsia japonica (more commonly known as Aralia Sieboldi), the Acer Negundo fraxinifolium variegatum, the Mesembryanthemum cordifolium variegatum, the beautifully variegated bedding Tropæolum named Minnie Warren, and several varieties of variegated-leaved Holly. The seedlings of all these come up either creamy-yellow or white, and perish after attaining their second or third leaf beyond the seed-leaf. Is it not therefore surprising that the seed should germinate at all?—W. E. GUMBLETON, *Belgrove, Queenstown.*

Flowering Bougainvillea spectabilis.—Mr. Spelman asks (see p. 83):—"How can I induce this Bougainvillea to produce its mauve-coloured bracts?" This has puzzled many cultivators of this plant. In a warm conservatory here, I planted it out in a border, and it grew vigorously every year, but never flowered. I had it at last carefully lifted, with as many roots as possible, and re-planted in a narrow border, with nearly a foot of broken brick-bats for drainage. It grew very weakly in the summer, but was assisted with some weak manure water until the autumn, when water was withheld at the roots all through the winter months, until nearly all its leaves dropped off. In March, its roots were well watered again, and its branches frequently syringed, and in June I was rewarded by seeing wreaths of its mauve-coloured bracts on every young shoot. It has flowered well every year since, under the same treatment, until last year, when it only flowered sparely. B. spectabilis does not flower freely when grown in pots, although B. glabra will.—WILLIAM TILLERY, *Welbeck.*

Eranthemum pulchellum in a dwarf state.—I find this old-fashioned stove plant to be very useful in a dwarf state. To secure it in this condition, we strike the flowering points from old plants, in the way we propagate Poinsettias, rather late in the summer, and they furnish pretty heads of bloom when not more than 6 in. in height.—J. GROOM.

Grafting Periwinkles on the Oleander.—According to the "Revue Horticole," M. Lambotte, an artist at La Muette, conceived the idea of grafting different varieties of Periwinkle on the Oleander, and successfully accomplished it. This is, however, not so surprising as it appears at first, for both genera belong to the Apocyneæ. It is even probable that the pretty Vinca rosea from Madagascar would succeed on the Oleander.

THE KITCHEN GARDEN.

MR. CARRUTHERS' REPORT ON THE POTATO DISEASE.

THE Royal Agricultural Society deserve thanks for the practical steps they have taken to elucidate the mystery of the Potato disease, but, as many predicted, the experiments now recorded by Mr. Carruthers confirm nothing so certainly as the opinion entertained by all Potato-growers from the beginning, that the disease is caused by excessive wet. In the history of fungology the discovery of the "resting spore" may be a great thing, and the discoverer may deserve a somewhat less reward than the raisers of Paterson's Victoria Potato, York Regent, or the Old Fluke, for example, if those men are most deserving who confer the most practical good on the greatest number of their fellow-creatures. But, assuming the history of the fungus to be correct, and that it is as subtle as it is said to be, to talk of stamping the "spores" out of existence by burning the haulm of a crop spread piecemeal over the length of the land is about as reasonable as trying to stop the tide with a pitchfork. According to the scientists, a single spore set at liberty in a shower of rain would people a county at least with its progeny in a marvellously short period; it would therefore be a "vigorous and universal attempt" indeed, enforced ten thousand times more strictly than any vaccination or "school-board" decree, that would succeed in destroying the "spores" on every Potato patch throughout the kingdom, more especially seeing that the disease is in progress among late and early Potatoes from Midsummer to November. The silkworm disease—quoted by Mr. Carruthers—is hardly a parallel, but the Vine mildew (Oidium Tuckeri), when the seasons favour its development, is just about as destructive as the Potato disease. As a matter of fact, our position now, with regard to disease, is as helpless as ever it was, notwithstanding all that has been done and written on the subject; perhaps the hopelessness of contending against the Peronospora has been more clearly demonstrated, if anything, of late years. To realise our true position fully is the first duty in the presence of the enemy. Mr. Carruthers suggests growing the Potato most extensively where the rainfall is the least. This is, undoubtedly, good advice; but the Potato is a paying crop, and farmers will go on cultivating it, notwithstanding the rainfall, whenever they can calculate upon an average return, taking one year with another. They can help themselves, however, by planting only on well-drained land, and, where practicable, in shallow soils. Though the results may not be always uniform, I believe it is generally admitted that the least disease is always found on the driest knolls in a field of Potatoes, more particularly when the subsoil is rocky or gravelly, and crops up to within 9 in. or 1 ft. of the surface. On such positions, too, the Potato stems are more woody and better matured, and after rain both they and the ground are soon dried by the sun and air. S. W.

Asparagus for Decoration.—Perhaps some of your readers may not be aware what fine subjects well-grown Asparagus makes for the table or other kinds of decoration, but I can assure them that it is well worth a trial. I grow a quantity every year, and find it excellent, whether berried or not. And, besides, by my plan an early cutting of "grass" is obtained, which, in itself, pays for any trouble that may be expended upon it. My plan (which, doubtless, can be much improved on) is as follows:—In January I place a quantity of strong roots in pots just large enough to hold them, 48's and 32's being the general sizes used. The crowns of the plants are about half an inch below the surface of the soil, which is composed of sandy loam and rotten cowdung in equal parts, and a little sharp sand. When potted the plants are thoroughly watered, and placed on the front stage of a warm house, the crown of each plant being covered with a large 60-sized pot, and the soil is not allowed to become dry. Immediately the plants have got shoots 1 in. long, weak liquid manure is applied, and as soon as they reach the length of 3 in. the pots are removed for two days, and the Asparagus is cut, leaving only one shoot, which should be either the strongest, or else a comparatively weak one, as large or small plants may be desired. As soon as the foliage begins to open fairly, the plants should be placed in a cooler part of the house to harden off a little; and from thence may be taken indoors as required. Another batch is also brought on in cold frames to succeed the first lot; and a third batch is retarded as much as possible to come in very late. During growth, liquid manure must be plentifully supplied; and it is also necessary to affix a light Hazel rod, to support the stem while growing. Every one who has seen my plants in use under the gas has been pleased with them. Connover's Colossal is the variety used; and, by liberal treatment, the foliage is of a bright rich green, while the plants form a cone of foliage from the table to the top of their height; and, when laden with berries, they are really beautiful.—W. J. May.

Potatoes from 1 lb. of Seed.—Mr. Ford (see p. 533, Vol. VIII.) states that he had 2 lbs. of seed of each variety of Potatoes furnished by Messrs. Hooper, and that he picked from them those that would cut into most sets. Now Messrs. Hooper distinctly state that the quantity should be 1 lb., which was weighed at, and sent out from, their establishment. Therefore I consider Mr. Ford's statement at variance with Messrs. Hooper's arrangement. I had 1 lb. of each variety from Messrs. Hooper—four small tubers to each pound. Snowflake only cut into thirty-three sets, Eureka into thirty-five, and some of these were very small. I entered for the Hooper competition, but afterwards withdrew. Many gardeners, I imagine, would be glad to have Mr. Ford's make-shift system as regards manure, it being nearly as much as I can afford per half-acre, without the guano. Manure proves to be neither necessary nor beneficial, however, for the Potato crop, as it only tends to increase disease, and those that remain sound are not so good in flavour as others grown on poor soil. Messrs. Hooper, I think, did well to offer such liberal prizes, but they would, I think, have done better had the prizes been awarded according to the space of ground occupied.—W. Divers.

Heeling-in Broccoli.—This practice is not adopted by our large market gardeners; and yet their crops are not more injured by frost than those in private gardens. It is, indeed, exceedingly doubtful, when severe winters occur, whether any process of laying possesses any mitigating effects. Fortunately, severe injury to the Broccoli crop is the exception rather than the rule, and is quite as likely to be the consequence of imperfectly-ripened stems as of hard weather. The immense breadth of Broccoli grown for the London markets renders any process of heeling-in almost impossible. A few hundreds of plants might be so managed; but when hundreds of thousands are in question, the case is different. A neighbour of mine was engaged last spring in cutting, and sending to market for a large London firm, a huge piece of Broccoli grown in Kent; and the consignments averaged 12,000 heads per day for twenty days. Deducting some that were too much blown, and a piece left for seed, it is probable that there was a quarter of million plants in the piece; and as remarked, there was scarcely a failure anywhere. There is just now to be seen, near the Shepperton station, on the Thames Valley Railway, a splendid breadth of Broccoli, consisting of about 18 acres. Such extents as these show that market growers cannot afford to "heel in" their crops of this esculent; and yet they are in every way excellent, and failures seldom occur.—A. D.

Snow's Winter Broccoli.—I have been cutting Walcheren and Veitch's Giant Cauliflowers for the last month, but neither of these can be compared with Snow's Winter Broccoli at this time of the year. I make it a rule to keep planting out Cauliflowers up till late in September as chance crops. I go over them once a week, and all that have a flower the size of a half-crown—if the weather be likely to be frosty—are taken up and placed in frames. Should this be neglected, one night's frost of a few degrees will spoil them; but Snow's Broccoli is partly self-protecting, and much hardier than Cauliflowers. I have tried most other kinds of Broccoli, but none come up to Snow's. The great point is to get it true. I have had seed of it from many, but it has been Snow's in name only. Just a word as to the difference of two plots planted with Broccoli from the same seed-bed, sown on the first week in March; the one plot from which I have been cutting was planted between early Potatoes; this ground was trenched two spades deep, and the sub-soil was loosened; rotten manure was placed at the bottom and also on the second spit. In fact, it was a piece of ground that was well prepared for Potatoes; it, therefore, answered for Broccoli with no further cultivation, and they did well, and came in some time before Christmas. The other plot of ground was dug one spade deep, using plenty of manure and a coat of soil, but the plants are small, and, as yet, but few of them are fit for use. In fact, the one plot is worth three of the other. So much for cultivation?—John Taylor, *Hardwicke Grange.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Welch's Giant Brussels Sprouts.—This is one of the best varieties which I have grown. Its Sprouts are not too large, but of a full medium size, and closely set on the stalks. The plants are very hardy and productive.—Richard Nisbet, *Aswarby Park.*

Germination within the Fruit.—"D. D." (see p. 56) asks if this is a common occurrence. A few years ago I saved some Cucumbers for seed; after they were cut, I left them in the frame for several days to ripen; and, when opened, I found that several seeds had commenced to vegetate, and that, in a short time, had the fruit been split open, the seed-leaves would have been perfect. This I attribute to the heat in the frame acting on the juice contained in the fruit, which, becoming warm, had started the seed into growth.—W. Divers, *Wierton.*

TREES AND SHRUBS.

BERRY-BEARING AUCUBAS.

Allow me to thank Dr. Denny for his useful hint respecting grafting the male Aucuba on the female plant for the purpose of facilitating the production of berries. Like all really useful suggestions and processes of whatever kind, this has simplicity to recommend it, and the fact that the plan has not become general in nurseries is possibly because it has not been before thought of. I for one shall certainly graft some on the first opportunity. Would Dr. Denny kindly say what month he chooses for the operation? A large bush of the old female Aucuba, growing in a rather moist, shaded position here, was full of open blossoms one warm day in June last year, and the thought occurred to me, what a fine sight this plant would be at some future time if all those blossoms could be fertilised. While regretting my inability to do this from want of pollen, a forlorn hope presented itself. Some three years before, amongst a large consignment of evergreens, a dozen small seedling plants of Aucuba had been received, which had been planted in an unfrequented part of the grounds. Search was made for them, when they were found in the same diminutive state in which they had been received, some of them nearly eaten up by rabbits. Fortunately, two proved to be male plants, and had a few very doubtful-looking blooms on them; these blooms were secured by cutting off the little spikes entire, and it was only the work of a few minutes to touch over with them the female blossoms of the large plant. This was persevered in even after the pollen must have been exhausted, and, it must be confessed, with but very faint hope of success. For months the embryo fruits remained stationary the size of Radish seeds, but did not drop off, which furnished a ray of hope. Now, however, we have the satisfaction of seeing that the experiment has taken effect, there being some scores of berries, still green, but the size of half-grown Cherries, which will, no doubt, ripen in due time. The small amount of pollen which will fertilise a multitude of blossoms seems marvellous, when both sorts of flowers are in the proper stage of maturity and the weather favourable.

Canford. W. D.

All of us must feel indebted to Dr. Denny for relating his experience with the two sexes of the Aucuba; the following may be interesting to some of your readers. I have, in a small garden, six female Aucubas; two of these stood side by side, the branches meeting. Last spring, I placed between these a small male pot plant, having three or four flower sprays, and raised fairly above the female plant; the result is that the two, between which the male plant was placed, are crowded with berries; two others, in opposite directions, each about 6 feet distant, have a fair sprinkling; while the remaining two, of much larger size, and distant 10 and 15 feet respectively, have each a few single berries here and there. At the time of trying this experiment, I had doubts of a successful result, as the male plant, having been under glass, was considerably in advance of the females; indeed, the bloom of the former was fast withering when that of the latter began to open.—G. G., *Notts.*

Olives in the South of Ireland,—A good many years ago I recollect, says a correspondent of the "Gardeners Record," seeing a magnificent specimen of Olea paniculata at Sheldon Abbey, Co. Wicklow, and if still living (which I have little doubt it is) I have no hesitation in saying that it has not an equal in the three kingdoms. O. sativa is also quite hardy, and well deserving of cultivation; and then we have O. fragrans, the dwarfest growing, and, at the same time, the most interesting of them all. I am unable to say whether it is sufficiently hardy to stand in the open border, but I have little doubt that it is; at all events, it succeeds perfectly without the slightest protection against a south wall. The flowers are yellow (all the other species being white-flowered), and delightfully fragrant, a few blossoms being sufficient to scent a large room. It certainly should find a place wherever rare and beautiful shrubs are valued. All the species like an open well-drained soil, which may consist of equal parts loam and peat. They may be propagated by cuttings of the ripened shoots in spring, inserting them in sharp sand; keep them in a close frame or pit, and place a hand-light or bell-glass over them.

Dryness at the Root in Winter.—A writer in "Moore's Rural" commenting on Mr. Groom's note in The Garden, on the evil effects of over-drying plants in winter, says—"We can add, from personal observation, that injury to garden trees from excessive cold is more frequent during our American winters, when the ground is excessively dry, than when it is moist. This may indicate that the roots of trees absorb some moisture, though only slowly during winter, and thus supply the loss by evaporation from the trunk and branches; or it may be only a result of the ice in the soil, forming a covering and protection to tree roots from the severity of cold. Ice never becomes colder than 32° Fah., while a cold atmosphere may sink far below zero. A thickness of ice on the surface of the ground may protect the roots from injury just as Esquimaux and other far northern races are kept warm in winter in huts of snow. Beneath the frozen surface there is probably also some action, though very slight, of the roots, even in winter. There must be some evaporation from the bodies, branches and twigs of trees, even in winter, and, unless this loss of moisture is somewhat supplied, trees would die and wither. With Evergreens, evaporation of moisture during winter must be very considerable, and require a large amount of moisture to prevent injury.

The True Jute Plant.—There appears to be considerable confusion as to the plant from which the substance so extensively used in the arts under the name of Jute is really derived. On investigation, however, it appears that the crude Jute comes from two species of Corchorus, namely C. capsularis and C. olitorius, grown principally in Bengal. Plants popularly known as Jute, however, growing in the Madras Presidency, are the Hibiscus cannabinus and Crotalaria juncea; and their fibre is not the true Jute, though hitherto considered such.

NEW PLANTS, &c.

Blandfordia flammea var. princeps.—A showy Liliaceous plant from New South Wales, having grassy foliage and erect spikes of large pendent infundibuliform flowers, elegantly six-lobed at the mouth. The flowers are very attractive in colour, being crimson-scarlet suffused with rose, and the divisions of the perianth being golden-yellow. It well deserves culture as one of the best forms of a showy group. It was introduced by Mr. W. Bull in 1873, and has repeatedly been exhibited and admired at the Metropolitan Exhibitions. "Botanical Magazine," t. 6209.

Calathea leucostachys.—This is a showy species, having oblong deep green leaves, purple beneath; it bears an erect scape of white flowers, sheltered by large revolute bracts, white above and yellow behind. The inflorescence, at first sight, reminds one of that of a Curcuma; and, if freely produced, we may hope to have a race of Marantas with beautiful flowers, as well as with fine foliage. This plant first flowered in Messrs. Veitch's establishment, in October, 1874, the plant having been sent from Costa Rica, by the late M. Endres. "Botanical Magazine," t. 6205.

Diuris alba.—A pretty little terrestrial Orchid, from New South Wales, where Dr. Hooker tells us the meadows are enamelled with beautiful terrestrial Orchids during the spring and summer months, thirty or forty species being found in a very limited area. The present species has a broad ovate rosy-white dorsal sepal, the lateral ones being green, striped with a chocolate line down the centre, the ovate unguiculate petals white, suffused with rose, and having a purple streak or blotch on the claw, the lip rhomboidal, of a delicate rosy colour, edged with white, and having a golden-yellow crimson-dotted crest. The foliage is Grass-like, and the tubers lobed. "Botanical Magazine," t. 6201.

Pernettya Pentlandii.—A small-growing evergreen shrub, a native of the Andes from Venezuela to Chili, ascending to near the limits of perpetual snow, and varying much in habit and flower. It has branching stems, clothed rather densely with ovate serrate leaves of white axillary Arbutus-like flowers, being succeeded by deep bluish-purple berries, about half-an-inch in diameter, the persistent five-lobed calyx being also fleshy, and of a glossy purple colour. This plant was raised from seeds sent to Mr. Anderson Henry from Quito, by the late Dr. Jameson. It fruits in November, and is perfectly hardy at Hay Lodge, Edinburgh. "Botanical Magazine," t. 6204.

Androsace sarmentosa.—A dwarf-tufted Alpine from the Himalayas, and growing in the Ramaon territory at elevations varying from 11,000 to 12,000 feet. It is said to be very nearly related to A. lanuginosa; the latter is, however, a more silvery plant—indeed, nearly white—and there are other details of habit which serve to distinguish them as garden plants. The leaves of our present plant are oblong lance-shaped, ciliate, and it has the habit of throwing out little plants at the apex of slender pink stems in a way analogous to the Strawberry or some viviparous Saxifrages. The flowers are bright rose-lilac, as large as a threepenny-piece, having a white eye. They are borne in trusses of ten to twenty flowers on an erect Primula-like scape, and the whole inflorescence at first sight closely resembles that of a bright, rosy, white-eyed bedding Verbena. It has bloomed in April with J. Anderson Henry, Esq., at Hay Lodge, Trinity, Edinburgh, and is said to be propagated with great ease by its runners which hang over the sides of the pot in profusion. "Botanical Magazine," t. 6210.

SNAILS AND HOW TO DESTROY THEM.

With thrips, red spider, and similar pests, a few of us have had to deal; but all who have a garden, or who have ever grown a Cabbage or a Cauliflower, have had to contend with snails. Dryness favours the movements of most vegetable-destroyers, but the opposite holds good in the case of snails, whose greatest depredations are committed during damp weather, and in early spring. The damage sustained by seedling Cabbage, Cauliflower, and Lettuce plants, through their ravages, is incalculable; and it is not the seed-bed alone that suffers, for, even after the plants are established in their permanent quarters, they are often eaten over near the surface of the ground and destroyed. In the case of kitchen garden crops, a sprinkling of newly-slaked lime over the parts most frequented by them forms one of the greatest obstacles that can be put in their way; but even this is ineffectual as regards annihilation. Lime should not be applied when rain is falling, as, in that case, its effects are then quickly lost. The best time to use it is in the cool of the evening, when the snails are busy at their work of destruction, and when the ground is moderately moist on the surface, or in the morning before the sun shines strongly. Hand-picking is a sure but slow plan of destroying them, and if resorted to it must be done early in the morning before they have got under cover. They dislike a sharp rough surface, and good often results from laying down a small circle of ashes or sand about 3 in. from the stems of the plants which we wish to protect. Lime may be laid down in this way, but it loses its power as soon as it becomes damp, and must often be renewed. Earthenware protectors made in the form of an 8 in. flower-pot, without the bottom, may be had, and one of these put over each plant when planted out cuts off all interference from snails until the plant has grown out of their reach. This plan is somewhat expensive at first, but cheap in the end, as the pots not only shut out snails, but if the days be hot or the nights very cold, they form an excellent protection to the plants when newly planted. Allowing decayed leaves to lie about the ground is sure to encourage snails. Their depredations, too, are not confined to culinary vegetables alone; on the contrary, there is scarcely a plant, either Alpine or exotic, with which they will not meddle. They are particularly fond of the young shoots of Lapagerias. Strong stems of these coming away from the root are often eaten through in one night. I have seen many attempts to prevent this happening fail until the base of the stem was encircled with zinc, or little zinc troughs holding water, a plan easily adopted, and always successful. The zinc should be about 3 in. broad, and its length in accordance with the size of the stem to be enclosed. Dracænas often suffer from snails eating out their tender centre leaves, and I lately saw a large Brugmansia with its leaves completely perforated through the same cause. Under glass they should be prevented from spreading by hand-picking, a plan which also applies to frames on hot-beds in which they congregate. They are also always to be found in abundance in Strawberry plantations, and if the season is wet when the fruit is ripening, they destroy large portions of it. Short Grass and other material laid around the plants to keep the fruit clean give them protection. J. Muir.

HEATING WITH SMALL CONNECTING PIPES.

As I see that in a recent number (see p. 60), Mr. Baines has given some hints with regard to the heating of houses, will he be so kind as to give me an answer to the following question:—Is it necessary that the connecting pipes from the boiler to the large pipes in the houses should be of the same diameter as these pipes themselves? The fact is simply this, some houses were built for me in my garden about four years ago, and a circular boiler was placed in a corner about 10 ft. below the level of the houses in question. This boiler has to warm a small stove nearest it, a pit also close to it, a large greenhouse, and a small cool plant house. The pipes in the houses are 4 in. ones, and the connecting pipes from the boiler only 2 in. ones. My gardener has complained to me each winter that he is never able to obtain an uniform heat as he wants it in each house, that in spite of the valves the heat will occasionally cool off in the one house and sometimes in another one. He attributes this to the connecting pipes not being of the same diameter as the others. I should very much like to know whether this is the cause or not. I ought to add that the smaller connecting pipes are brought up a few feet above the boiler, and that they then run along near the back of the greenhouse under a perforated tile. W. B. N.

Sevenoaks.

[It is always difficult to hit upon the exact cause of the unsatisfactory working of a heating apparatus without seeing it, especially when there may be several causes that would have the effect complained of. "W. B. N." does not state the size of boiler employed, nor does he give the dimensions of the houses to be heated by it, and, above all, the quantity of piping in each house, or the different levels (if there be any) of the pipes used—all matters having an important bearing upon the subject. In the arrangement of pipes I always avoid so great a difference in the size of the connections betwixt the boiler and the pipes absolutely inside the house as that which exists in the case of "W. B. N.'s" pipes, although the work may not be unsatisfactory where there are not many houses to be warmed by one boiler, or where more work is not required of it than it is well capable of performing. Unless the boiler is very small or the piping insufficient in quantity, I should scarcely think that, in this case, the inefficient working is attributable to the smallness of the connections. "W. B. N." states that sometimes one house and sometimes another gets too cold. This is, I presume, before morning, when the fire has burnt down, after being made up the night before; or, is it that the water does not circulate sometimes in one house and sometimes in another, the valves, of course, being open? If the former, I should suppose the furnace does not hold enough fuel to last throughout the night, or the piping is not sufficient in quantity; if the latter, the irregularity of the circulation is no uncommon occurrence, even where the pipes in the several houses are, as they always should be, as near of an uniform level as possible—that is, not considerably higher in one house than another. I have heated ten or twelve houses attached to one boiler, with not more than a few inches difference in the level of the pipes in the whole, and it often happened that when the valves of any of the houses in which the heat was not regularly on, were opened a little to let the water go round, it would not at first move without opening the valve almost to its fullest extent. This necessitated the man in charge staying a short time to see that the water did circulate, after which he closed the valves to the point necessary to give the heat wanted; these, of course, were houses that were merely required to be kept a little above freezing. The cause was not, as might be supposed, an accumulation of air in the pipes, but through the water running freely through the pipes it was regularly on. I have seen the same thing occur in a single house, where a flow and return pipe from the boiler entered at the middle of one end, branching right and left down each side, both exactly on a level. I had valves at each side close to the point where the pipes entered, and whichever valve was opened first the water would flow on that side so much more freely than on the other as to make the pipes doubly hot on that side; and this would continue, if we did not regulate it by slightly closing the first-opened valve even when the water was got up to nearly the boiling point. This is, however, an exceptional case, owing to the level of the pipes being so evenly balanced; and I simply mention it to show that from slight causes often arise considerable results. In "W. B. N.'s" case, if it be the cool plant-house and the green-house and Vinery that fluctuate as regards heat, the remedy will lie in a very careful handling of the valves, regulating them so as to cause the water to flow equally in all the houses just named.—T. Baines.]

Influence of Pine Trees on Temperature.—Our greatest regret regarding Pines is, that we cannot get enough of them, or set them fast enough. We would have a line of them on the northerly side of every orchard we cared to cultivate, and on every barren or unsightly knoll, and in every spot on the farm where they would protect the fields from the fierce winds and storms of winter. There is scarcely a farm upon any sandy plain or exposed hillside that could not be made to produce more and better crops if one-eighth of the land now cultivated were judiciously planted with evergreen trees. They break the force of violent winds in summer, when the tender crops are growing, and in winter when the fields are bare. Pines seem to increase the temperature of the surrounding atmosphere. Let one try the experiment some cold, windy day, of standing for a short time on the northern and then on the southern side of a Pine grove. The difference in the climate is often as great as between March and May. The north winds, as they come down over the snow-covered hills, are checked in their course by the millions of fine, narrow leaves which hold the air stationary, like the double walls of an ice chest. It is not always the coldest air that is the hardest to bear. We all know how much colder it seems to ride against, than with the wind, on a cold day. Cold air in motion takes the heat rapidly from everything with which it comes in contact. The heat our animals and our plants thrive in so well comes from the sun, and we should endeavour to save it as much as is within our power by protecting our stables and our fields from the fierce winds which, when unobstructed, carry away this heat and disperse it so rapidly. To this end Pines, or other evergreen trees may be planted on the exposed sides of fields or buildings with marked effect and great advantage.—"Cultivator."

The Baobab or Monkey Fruit Tree is well known from descriptions as one of the giants of the vegetable world. It rears its trunk 30 or 40 feet high, with a diameter of from 3 or 4 feet in young plants to 20 or 30 feet in the older trees. . . They have been measured of as great a size as over 100 feet in circumference; the thickest trunk I have ever seen was 66 feet in circumference, and was clean and unbroken, without a crack on its smooth bark. The leaves and flowers are produced during the rainy season, and are succeeded by the long pendent Gourd-like fruits, like hanging notes of admiration. . . . Millions of these trees cover the whole of Angola, as they do in fact the whole of tropical Africa, sufficient to supply an incalculable amount of paper material for years.—J. J. Monteiro.

The Eucalyptus as an Insectifuge.—We extract the following passages from a letter recently received from Mr. C. Baltet, of Troyes, and recommend our readers to try the experiment for themselves when the season arrives:—"Lately my brother-in-law, Captain Mignard, being very much disturbed in his sleep by mosquitoes, took it into his head to place a young plant of Eucalyptus in his bed-room over night. From that moment the insects disappeared, and he slept in comfort. I have been following his example with the same result. Should this really prove generally efficacious our southern provinces will be freed of one scourge. People will use young plants of Eucalyptus instead of mosquito curtains."—"Illustration Horticole."

The Common Broom as a Fibre Plant.—The common Broom (Spartium junceum) is described by some as furnishing a fibre equal, and in some respects superior, to that of Hemp and Flax. In view of the great extent to which this plant occurs wild in Europe, and the ease with which it is cultivated, such an application, not indeed new, but only more recently revived, promises important results. Its fibre can be very minutely divided, and as it retains heat, it can supply the place of wool. It receives the most delicate dyes as well as an animal fibre, and successfully resists the action of acids and salt water without undergoing any change or losing its tenacity. Its strength is one-third greater than that of Hemp, while it is thirteen per cent. lighter.

The Smilax as a Window Plant.—The Myrsiphyllum asparagoides, commonly known as Smilax, is one of the prettiest little climbing plants with which I am acquainted. There are no large and showy leaves or gaudy-coloured flowers to attract attention, but everything about the plant, from its long, slender, Grass-like stem to its small, delicate, fragrant, white flowers, is the very perfection of grace and neatness. The roots, being small, require but little pot-room or soil, and the vines shoot up rapidly, clinging to any slight support given in the form of twine, wire, or trellis. Plants are easily produced from seed, or they can be had very cheaply of almost any florist. I do not think the merits of this neat little climbing plant are as fully appreciated as they deserve by those who take delight in cultivating window plants, as it is especially adapted to this purpose. While a majority of plants of a similar habit become large, coarse, and cumbersome when fully developed, this Smilax never reaches such a stage, but is always light and graceful, no matter how strong and vigorous the growth. It is extensively cultivated by our florists, the gentler sex being their principal customers, for Smilax enters largely into those "little nothings" which add so much to the grace and beauty of the final touches of a lady's toilet. Although the vine appears to be very delicate and fragile, it is quite the reverse, for the stems are almost as tough as wire, and the leaves remain fresh, without wilting, a long time after the twigs are separated from the parent plant, even in a warm and dry atmosphere, hence the special adaptability to the purpose named.—E. S. Fuller, in "Moore's Rural."

The Agricultural Holdings Act.—This Act is not of that permissive character generally supposed. It affects all yearly tenancies if proper steps be not taken to prevent its application. On the 4th of February next it will come into operation, and all landowners, therefore, who have not yet thought much about it will do well to consider it without delay, while time still remains for taking such steps as may be advisable. The Act does not apply to Scotland or Ireland at all; it does not apply to any holdings which are neither agricultural nor pastoral, and it has no concern with plots of ground less than 2 acres in extent. Tenancies for fixed terms, under written agreements, and already existing, stand in just the same position as if the statute had never passed; but every new lease made after the 4th of next February will be the subject to the provisions of the Agricultural Holdings Act, unless the landlord and his tenant make a special contract in writing, which will, of course, usually be embodied as a clause in 'the lease,' to the effect 'that the Act is not to apply. There are, however, in England a great many holdings which are held from year to year, or at will. In such cases if the proprietors, or, for that matter, the tenants, desire to be on the same footing as formerly, without allowing the recent statute to change their relations, then one of the parties must give notice in writing to the other before the 14th of next April, that he wishes the existing tenancy to remain unaffected by this Act. But to make clear beyond question that the principle of freedom of contract is to be everywhere respected, there is a clause, the 46th, which expressly declares that nothing in the Act shall prevent landlords and tenants from making whatever agreements they think fit, or shall interfere with such agreements. No landowner, therefore, who objects to the measure, and desires to keep out of its provisions, need be touched by it at all, if he only instruct his lawyers to draw up his leases carefully.

Some Uses of Chestnuts.—Young or ripe, new or dry, raw or cooked, reduced into flour, prepared in fried cakes, or made into soup, Chestnuts furnish a wholesome food, agreeable to the taste and easy of digestion. If boiled in water with Fennel, they do not produce flatulency. For keeping, they are either dried in ovens or in the sun, and packed away with leaves in a barrel. Our foreign imports of Chestnuts have been declining; they have ranged from 65,000 bushels to 25,000 bushels. Chestnut flour, so unknown to us in England (although there is no reason why this should be), is the staple food of many Italian peasants, with which they make their polenta, preferring it to Maize, as being more nutritious. The cost per head for this kind of food is from 3d. to 4d. per day. The Chestnut is also used whole for soup, while in some districts the flour is baked like oat-cake. A quantity of Chestnut leaves is collected from the trees, the meal being mixed with water and the leaves placed on a hot iron plate to receive the dough. It is then covered with another layer of leaves, and a hot iron placed over the whole. Infants even participate in the advantages of Chestnut meal, and are said to thrive remarkably well on food made from it. There can be no reason why Chestnuts should not be more used in this country.

Making Coffee.—The art of making coffee seems to be almost lost. We will tell the reason; it is neither bought properly, nor properly prepared for table. Here is a receipt which was in common use with our mothers and grandmothers, and will never fail to produce good coffee. First, find a housekeeper who has been so brought up that she knows good raw coffee when she sees it; next, let her buy good coffee, not send an order to the grocer for it, but personally examine and buy the coffee; next, let the coffee be roasted as often as once a week under the personal superintendence of this housekeeper. She certainly should personally see that whoever roasts it does it gradually and thoroughly, to do which she should know the colour and perfume of properly roasted coffee. The roasted beans should then be put into glass jars, tightly stopped. Then, about fifteen minutes, and not longer, before the coffee is needed, the beans should be taken out and ground, and the grist go directly from the mill into the coffee-pot, otherwise some of the much-prized aroma and flavour will pass off. Thus made, in almost any sort of pot, coffee will surely be good—as good as it used to be when our mothers made it, for this was their receipt. As to buying ground coffee, or even roasted coffee in the bean which lies open to the air, or even grinding up a lot of coffee at home and keeping it in a big box, which may be open or may be shut, and then expecting good coffee, why, to say the least of it, one might as well look for sunbeams from Cucumbers!

Boiled Celery.—Take four or five roots of Celery, which have been very carefully washed and trimmed, boil them in well-salted water for nearly half-an-hour. Drain them, place them on a hot dish, and pour good melted butter or a white sauce flavoured with a little powdered mace over them. Celeri au Gratin.—Boil some Celery in well-salted water for half-an-hour, drain it, and place it in a hot dish, cover it with white sauce, and sprinkle over it grated cheese, one half the quantity of which may be Parmesan. Brown with a salamander.

OBITUARY.

Monsieur Jean-Laurent Jamin.—We regret to announce the death, in his eighty-third year, of this distinguished French horticulturist, which took place at Bourg-la-Reine, on the 13th inst. He was well known in England, and his ability as a horticulturist widely recognised in France. His nurseries are now carried on by his son, M. Ferdinand Jamin, one of the most able and best informed pomologists in France.

OPENING OF THE WESTMINSTER AQUARIUM.

This was opened by the Duke of Edinburgh last Saturday. Its main body consists of a large promenade or conservatory, wherein plants are grouped in excellent taste, the sides being occupied by rock-bound tanks, while above them the surrounding gallery is devoted to pictures and works of art. The building is 600 ft. in length, the conservatory or promenade being 340 ft. by 160 ft. and there is an entrance hall 136 ft. by 80 ft. with other accessories. The roof of the principal avenue is of iron and glass, and is glazed on the principle patented by Mr. Rendle, no putty being used, or metal exposed to the weather. Only flat glass has been used, the easy curves being the result of a succession of planes at angles corresponding with the successive radii. The total weight of glass employed was fifty tons, the measurement being 60,000 square feet. There were only two skilled workmen employed to fix the glass; they had only four labourers to assist them, and yet the work was all accomplished within a space of ten weeks. The tanks are 260 ft. by 53 ft., and will contain 800,000 gallons of water, which by a system of oxygenising will be preserved in a state of purity for an indefinite period. On the occasion of the opening 20,000 plants were employed for decorative purposes. These were disposed in groups along the sides of the hall, and the beds surrounding the fount were carpeted with Lycopodium denticulatum, in which were plunged irregular groups of Hyacinths, Tulips, Primulas, Cyclamens, and Lilies of the Valley in profusion; the taller plants, dotted about in other places, consisted of Dracænas, Musas, Alocasias, Richardias, Pandanuses, Palms, &c. At the front of the orchestra was a fringe of Isolepis gracilis and Ferns. From the galleries were suspended hanging baskets, filled principally with Palms and fringed with Ivies and Vincas. On the conclusion of the ceremonial, H.R.H. the Duke of Edinburgh sent for Mr. Wills, and expressed to him his great satisfaction with the floral decorations.

Trees for Portland Place.—At a meeting of the Marylebone Vestry on the 28th ult., it was resolved on the motion of Mr. Harlowe,—"That it be referred to a special committee to consider and report as to the practicability and advisability of planting a row of suitable trees throughout its entire length on each side of Portland Place." [In this situation we hope the planters will not imitate the mistake of the planters of trees in Sackville Street, Dublin, and plant them in the street outside the kerb, to the inconvenience and danger of drivers. We hope also that, for variety's sake, some other tree than the Plane will be planted; there are various other trees that would do well in the position.]

Thiers a Gardener.—M. Thiers is an enthusiastic horticulturist. He knows each flower in his garden, and treats it as a personal friend. It is stated that attending to his flowers and shrubs gives him more real pleasure than preparing some great speech or achieving some gigantic scheme. In one of the articles written by him, a short time ago, is this passage, "I think when you talk of a nobleman great and good, that the tiller of soil, the producer of what we eat, is he."

NOTES AND QUESTIONS—VARIOUS.

Gigantic Cedar of Lebanon.—Monsignor Debs, the Maronite Archbishop of Beyrout, has presented for the new Montmartre Church of Paris a gigantic Cedar, described as one of the trees of Lebanon contemporary with those of Solomon and Hiram, which was lately blown down. Twelve planks from it will soon reach Paris.

Rapid Growth of Douglas Firs.—These in a plantation here, intermixed with Deodars, made growths last season, measuring over 3 feet. The soil is marl, and I may add that the ground was trenched for their reception.—D. Gillett, *Longmead, Bishopstoke, Hants.*

Hawthorn Caterpillars (see p. 75).—There can be no doubt that insects increase more in the environs of London than in most other places, in consequence of cats destroying the sparrows. I live within sight of Regent's Park, and used, thirty years ago, to have robins, wrens, and tomtits in my garden; whereas now even sparrows are rarely to be seen.—J. S.

Large Weymouth Pine (Pinus Strobus).—A tree of this lately cut down in the Arboretum here measured as follows:—Height, 62 ft. 6 in.; girth at base of trunk, 9 ft. 4 in.; length of branches, 27 feet on either side of trunk, at 18 feet from the ground; circumference, 6 feet. It grew in tenacious clay. Is its size in any way extraordinary?—D. S. Gillett, *Longmead, Bishopstoke, Hants.*

Paint or Varnish for Hot-water Pipes.—Can any of your readers tell me what to use for this purpose? I believe lamp-black and linseed oil will answer; but I do not know the proper proportions. My gardener used some sort of varnish which completely took the leaves off most of the plants in the greenhouse the first night on which heat was applied. I should, therefore, be thankful for some advice on the subject.—R. F. J.

To Correspondents.—"A Welsh Subscriber," "E. H.," "W. Pawson," "Recent Subscriber," "L. E. S.," "Bury," "Denman," and others, who do not send any name or address with their communications, are reminded that no query is answered which is sent without the writer's name or address, in addition to any pseudonym or initials the writer may desire to use in the paper.

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> "This is an art
> Which does mend nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

THE BOUVARDIAS.

THESE are nearly all natives of Mexico, and most of them have been introduced by M. Roezl; but both hybrids and sports obtained, not only in England, but also in America, now outnumber even the species; among the latter angustifolia, a brilliant scarlet kind, is dwarf in habit and a very free bloomer, and one which makes a valuable bedding plant, flowering, as it does, towards the end of the summer. B. flava, a distinct species, is bright yellow in colour; but, owing to its leaves being very thin, it easily falls a prey to red spider, if not kept in a moderately moist and shady place. Even where it blooms well, the trusses are small, seldom exceeding five florets to a truss. The best flowers are those borne by strong suckers, thrown up from the bottom. About the year 1850 or 1851, M. Roezl sent to this country several species, amongst which were B. longiflora and B. Humboldtii. B. longiflora still maintains its ground as the purest white kind in cultivation, and it is very sweet-scented; but it requires a little more heat than many of the hybrids and sports obtained from it. In 1855, the late Mr. Parsons, of Brighton, was very successful in raising some beautiful hybrids between B. longiflora and B. leiantha, using the latter as the male and the former as the female parent. The following four were in commerce in 1857, viz., Rosalinda, Laura, Oriana, and Hogarth. Of these, the last is by far the best, being bright scarlet. Laura is at times inclined to sport in colour; for example, last year I had flowers of it the exact counterpart of those of Hogarth; while some trusses of others have been pink, scarlet, and other shades of these colours. In the autumn of 1869, B. jasminiflora made its appearance; but it had been sold for some time previously under the name of B. longiflora, a kind from which it differs very materially; its growth, for instance, is much freer and more branching, even from the base; its leaves are longer and narrower, and of a much lighter green than those of that kind, and the flowers often consist of five, and even six petals. This is the kind so often met with in Covent Garden Market. In 1869, too, a very fine sport from B. Hogarth, named B. elegans, was imported from America—a remarkably robust and free-growing kind, its trusses and individual florets being nearly double the size of those of Hogarth, while in colour it is bright scarlet. In the autumn of the year just named, both Hogarth and B. longiflora were crossed with B. jasminiflora, and from the former was obtained Queen of Roses, the first Bouvardia with coloured flowers that were sweet-scented. It produces large terminal branching trusses of rosy-pink blossoms, that are produced for a long time in succession, and has a neat yet vigorous habit; B. longiflora flammea, also obtained from this cross, is one of the very brightest of its colour, which is salmon-tinted scarlet; but occasionally some of its petals will sport to pink, especially if grown in too cool a temperature. From the cross just named was also obtained B. Bridal Wreath, a fine hybrid having the vigorous branching habit of B. jasminiflora, with finer flowers and much larger trusses; likewise B. alba odorata, a dwarf, compact kind, with flowers of great substance in the form of very short tubes, and, as the name implies, very odorous. The flowers, too, are very persistent, often remaining on the plant till quite dead; they are of pearly whiteness, resembling white marble. The four varieties just described were "sent out" in 1872. In that year B. Davisonii, a beautiful white sport from Hogarth, and exactly like it in growth, was introduced from America. It is an invaluable kind for bouquets or coat flowers; but, if grown in too cold a temperature the blossoms are not so pure in colour as they otherwise would be. This variety, I am told, is largely grown in America for market purposes, both in the shape of plants and cut bloom. Another American kind, B. Vreelandii, very much resembling B. Davisonii, was also introduced in 1872. So much alike, indeed, are the two, as to be sometimes almost undistinguishable. Some plants from cuttings of B. Vreelandii grow as strongly as those of B. Davisonii, while others seem more dwarf and compact, resembling, in these respects, the basketsful of this kind that used to be exhibited at South Kensington, by the late Mr. Standish. In 1871, I had both B. Humboldtii and B. jasminiflora in bloom. I therefore crossed B. jasminiflora with the pollen of B. Humboldtii, and the result was about twenty seedlings, from among which the two following were selected for distribution in 1873, viz., B. Humboldtii corymbiflora, and B. jasminiflora longipetala. I also, at the same time, fertilised B. elegans with B. jasminiflora, the result being umbellata carnea, umbellata alba, and candidissima, all of which were good, and were sent out in 1873. Of these, B. Humboldtii corymbiflora is a great improvement on the parent, the latter producing but one solitary flower on each shoot, generally on the top, but occasionally on a side-shoot; whereas the hybrid now under notice bears fine trusses of flowers, varying in number from eleven to seventeen, and deliciously sweet-scented. In robustness and free growth, it resembles B. jasminiflora; and, if given plenty of pot-room and a liberal supply of warmth and moisture, it soon forms a fine specimen plant. Besides being a useful plant for pot-culture, individual flowers of it are also of the greatest value in bouquets, in which, when well arranged so as to stand up above the other flowers, they have a charming effect. The next in this group, viz., B. jasminiflora longipetala, is a distinct hybrid, the leaves of which are very dark in colour, and the habit upright. The flowers, which are pure white, are borne in dense trusses much larger than those of B. jasminiflora, and delightfully fragrant. Like B. jasminiflora, it requires a warm moist temperature to bring it to perfection. B. candidissima is remarkably neat and shrub-like in growth. Its flowers are of snowy whiteness, and partake of the close truss and petal of the female parent. B. umbellata alba is intermediate between B. elegans and B. jasminiflora, the growth being sub-erect and well branched. Its flowers are of the purest white, and the trusses close like those of B. Davisonii. B. umbellata carnea is a very great improvement upon the American variety, B. longiflora carnea. It is neat in habit, and bears large open trusses of trumpet-shaped blossoms, of a beautiful rosy-blush colour, the individual flowers being much larger than those of either of its parents. B. Maiden-blush, a beautiful soft blush-pink-coloured sport from B. Davisonii, was obtained in 1873. In habit and truss it is the exact counterpart of Davisonii, and, being distinct in colour from all other kinds, it is a great acquisition. It was sent out in 1874. B. Van Houttei has long, narrow, deep green leaves, and a somewhat wiry habit; its flowers, which are produced in abundance, are bright orange-scarlet in colour, and its appearance generally is so different from that of other Bouvardias that I am half inclined to think it is a species. B. splendens is a free-blooming well-known scarlet variety, dwarf in habit, and some years ago one of our best market plants. B. Oriana lutea, pink shading off to orange, is a kind with a somewhat weak habit, and one which produces but a small truss of flowers, of little value to any one but those who grow collections of Bouvardias. B. Oriflamme has leaves of no great size, and bears small loose trusses of cerise-coloured flowers that are rather distinct in colour. B. bicolor, a seedling from B. flava, crossed with B. elegans, has a habit like that of the latter, and very distinct-looking purple flowers with rosy-pink lobes, slightly tipped with white, and a centre or eye also of that colour; this variety was sent out last year. B. multiflora, introduced in 1874, and sent out the year after that, is described by M. Roezl as the most distinct in the group to which it belongs; it produces numerous violet-coloured flowers tipped with white, and has very small leaves like those of a narrow-foliaged Myrtle. In habit it is dwarf and bushy. Besides these, many others are in cultivation, but they have, for the most part, been superseded by better varieties. Bouvardias of all kinds may be easily propagated in a moist warm bottom-heat of, say, 80°; cuttings made of the half-ripened wood strike best, and the soil in which they are inserted should be finely sifted, and should consist of three parts peat and one of yellow loam, with a liberal admixture of silver sand. This should be put over the crocks, which should half fill the pots, and, on the top of all, put sand to the depth of a quarter of an inch; then sprinkle with water and insert the cuttings, which must be put under glass and never allowed to flag. As soon as they are rooted, which will be in about three weeks or so, pot them off singly into thumb-pots, and set them on a brisk bottom-heat. April is the best month in which to strike Bouvardias for winter blooming. All the fleshy-rooted kinds make good plants from roots cut up into pieces about $1\frac{1}{2}$ in. long and just covered with finely-sifted soil. Bouvardias, to succeed well, should never receive a check from the time they are potted off until fully grown. They like a genial bottom-heat and a warm moist atmosphere; if grown in a hot, dry one, red spider and green fly are sure to attack them. For the latter fumigate with tobacco, taking care that the leaves are dry before doing so; rather a close house suits them best, but they should have air on all favourable occasions, syringing morning and evening when the weather is warm and sunny. Keep the points of the shoots pinched out up to August, after which they should be allowed to grow and set for bloom. I have said nothing about shifting them into larger pots; but, of course, that must be done whenever they require additional pot-room. They should not be kept in pits or frames too late in autumn, as, in that case, the leaves are apt to damp off. The very best varieties are:—Humboldtii corymbiflora, jasminiflora longipetala, umbellata carnea, umbellata alba, Maiden-blush, elegans, Davisonii, Vreelandii, jasminiflora, Queen of Roses, Bridal Wreath, alba odorata, Hogarth, and longiflora. R. H. B.

THE PRIMROSES.

In Mr. Niven's admirable enumeration of the Primroses he expresses a hope that some other contributors to The Garden will supplement his remarks. From a cultural point of view it would be difficult to add anything of value to what a writer of so much experience has to say; but access to a more complete library and herbarium enables me to furnish a little additional information respecting these favourite plants. I will begin with the Auricula. Last year Professor Kerner, of Innsbrück, published a detailed history of the origin of the garden Auricula. He asserts that the true Primula Auricula had little to do with the cultivated varieties, whose origin he traces back to P. pubescens. The latter he proves to be a natural hybrid between P. hirsuta and P. Auricula. The true P. Auricula, Kerner states, was soon lost to cultivation, and, beyond being one of the parents of the hybrid P. pubescens, it has had nothing to do with the garden varieties. Possibly, as Mr. Niven suggests, the Alpine varieties are really descendants of P. Auricula, the characteristics of which they have retained. There are two still more diminutive species than P. minima, namely, P. saxifragifolia from Unalaschka, &c., and P. minutissima from Sikkim, where it is found at an altitude of from 13,000 to 17,000 ft. The latter is an extremely minute flowering plant, often not more than half-an-inch high. The description of the leaves of P. Palinuri is quite correct, but the cut does not represent the true plant. The leaves, as Mr. Niven describes them, are broader upwards and rounded at the top—in fact, similar in shape to those of the Daisy, but more suddenly narrowed below the middle. The forms or species of the farinose section are the most widely diffused of all, and the most difficult to define, even if we confine ourselves to the wild specimens. They are found in the temperate and sub-Alpine regions of Europe, Asia, and North America, and also in the extreme south of South America. P. magellanica is, from a horticultural point of view, quite distinct from P. auriculata, an European form. In the wild specimens of P. longiflora, the leaves are not broader than those of several other forms described, nor are the bracts remarkably large, and the pedicels are sometimes $\frac{1}{2}$ to $\frac{3}{4}$ in. long; but the tube of the corolla is of unusual length, even in this section. P. involucrata and P. sibirica are joined by botanists, and, judging from the dried specimens, they seem to run into each other, the extremes of the Indian varieties exhibiting much wider differences between themselves than from the Siberian form. P. purpurea grows at an elevation of from 14,000 to 17,000 ft., and will doubtless prove a valuable ornamental plant. P. erosa is not usually a diminutive plant. Indeed, in stature it is equal to P. purpurea, of which it is regarded as a variety. P. Stuarti is a grand plant, and is widely distributed through North India, ascending to 12,500 ft. in Kumaon. The leaves are sometimes as much as 18 in., or even 2 ft. in length; and the flowers are sometimes borne in two or three whorls. P. cortusoides is widely distributed in north-eastern Asia and Japan, and I think the variety called P. cortusoides amœna is probably a Japanese garden variety of P. cortusoides. Some of the Japanese specimens in herbaria have the flowers in two whorls. P verticillata var. abyssinica is also in gardens, under the name of simensis (not sinensis).
W. B. H.

—— I trust that the publication of Mr. Niven's paper on the Primroses will serve to direct increased attention to this beautiful group of hardy plants. I know of no family so well worth the attention of amateurs, indeed, of all persons who love flowers that are hardy, early, and easy of cultivation. As a rule, I think the majority of imported Primroses do best when grown in pots; certainly, whilst they are scarce, it is best to cultivate them in that way, as some kinds, once lost, may not easily be replaced. If we include the Chinese section, although not hardy, the flowering period of the family is greatly lengthened, beginning, as it does, at Christmas, and extending in the shape of the late flowering or second blooming kinds, quite into the autumn. Probably it would be safe to say that a good collection of Primroses would have some one or other of the family in flower for nine months in the year. Mr. Niven considers. the variety commonly known as P. cortusoides amœna to be one of the finest of all our Primroses; and, if this opinion were restricted to imported kinds, I think it is, without doubt, the finest of all, especially if the variety mentioned includes its variations in the form of lilacina, grandiflora, and grandiflora alba, all of which make beautiful pot or border plants Mr. Niven considers that this variety is, in reality, a distinct species, and certainly it differs materially from P. cortusoides in its root formation, as is pointed out, and it is much hardier; but the nearest approach to P. curtusoides is a small white-flowered kind known as P. cortusoides alba, the foliage and flowers of which resemble the first-named kind, except in the colours of the flowers; but the roots are identical in character with those of P. cortusoides amœna. If any kind had a claim to be an original species I should think it would be this white form. It is evident that the so-called amœna is a variety exceedingly amenable to fertilisation, and, therefore, it is not improbable that the Japanese have greatly improved its original form, and perchance the kinds we now have are as far in advance of the species as our finest forms of Primula sinensis are in advance of the species originally introduced from China. In certain respects the variety called amœna seems to approach near to the sinensis section, and, if it should submit as readily to improvement as the Chinese Primrose has done, we can hardly imagine what beautiful forms may be produced from it. As exhibition plants, the varieties of amœna are worthy of all possible encouragement; and constructors of schedules of shows for May and June do not seem to realise what beauties they have overlooked. I hope it is not a feeling of partial nationality, but rather one of truthfulness, that induces me to express the opinion that no kinds of imported hardy Primulas can rival in beauty our choice richly-coloured forms of the Primula vulgaris. A perfect plant has a setting of rich green handsome foliage, and the flowers form almost a perfect bouquet in the centre, each flower being as correct in form as the severest florist could desire, and the colours are almost as various as in the Rose. Next in order of beauty come the best varieties of Primula veris, making either beautiful pot or border plants. For the latter purpose it is the best of all the family, as the foliage is always present, and consequently the plants are not in danger of being overlooked. This is the chief danger to which the beautiful varieties of amœna are subject, and I can give no better advice when they are grown as border plants than that a small mound of ashes or Cocoa-fibre refuse should be placed over each clump in the winter, as this would both protect the crowns and indicate their position. Anyone who may be desirous of forming a large collection of the Primula family can hardly stop at mere species; in fact, the very possession of them would naturally lead to the acquisition of many of the beautiful kinds that have sprung out of them. Primula vulgaris, veris, and Auricula have been exceedingly fertile in the production of varieties that have become florists' flowers, and a selection from these would naturally be desirable. They also give us the earliest and hardiest forms, and for these reasons are universal favourites. Apart from any charms the Primula family may possess for exhibition purposes, I think it is a matter for regret that no encouragement to their more extensive cultivation has hitherto been given in the shape of prizes for the best collections of distinct species and their varieties. It is needless to say that a competition of that kind would be one of surpassing interest. A. D.

Blue Hydrangeas in Cornwall. — Here Hydrangeas in shrubberies and plantations grow to a large size, and their massive heads of deep blue flowers contrast strikingly with the many shades of colour with which, in October, they are associated. It is only, however, in the shade that they are "beautifully blue;" for, under full exposure to light, they are always pale pink. I have often struck cuttings from our darkest blue plants for bedding purposes; but the flowers have invariably become pink the following season, and the same thing happens with plants of any age, if removed from a shady to a light situation, and *vice versâ*. Here, therefore, change of colour in the Hydrangea does not appear to depend on soil, but rather on shade.—J. Richardson, *Whiteford House, Callington.*

Boussingaultia baselloides.—I procured a single tuber of this climbing plant at Rome in April last; ia resembles in size and shape that of the Helianthus tuberosus or Jerusalem Artichoke. On my return to England it was planted in the early part of June in my orchard-house; the tuber soon vegetated, and the stem grew so vigorously that if it had not been cut back, it would have covered a large portion of the house. The leaves are round, of a bright green, somewhat succulent; flowers conspicuous. In the first week of this month my gardener took up the plant, and found round the roots nearly half-a-peck of tubers. On the whole, the plant is very interesting, and I should be glad to know something of its properties; the tubers may, perhaps, be edible.—E. D. Thomas.

Varieties of Scent in the Rose.—Commenting on Mr. Curtis's note to The Garden on this subject, Mr. Fish says:—Several more distinct perfumes might be added, as the Macartney scent, with a dash of the more pleasant odours of a chemist's shop; the Harrisonii scent, totally distinct from that of Austrian Briar or of any other Rose; the Devoniensis, sweetness distinct from all others with a dash of Souchong in it, and so unique that the writer has frequently selected this Rose in the dark from its fragrance alone. The Triomphe de Rennes scent is also distinct, as is also that of Boule de Neige and of Celine Forestier. Boule de Neige might be called the sweet-milk scent, having more of the pleasant aroma of new milk than perhaps any other Rose or flower. It also appears that the most fragrant Roses may be discovered by actual examination under the microscope from the greater prominence of their perfume-vesicles or glands. Those on the Moss Rose and Sweet Briar are almost visible to the naked eye. Judged by the glandular prominence or size test, as well as by the actual experience of the olfactory nerves, the following are among the sweetest Roses:—La France, Goubault, Devoniensis, Maréchal Niel, Bessie Johnson, Madame Knorr, Pierre Notting, and Charles Lefebvre.

Gentiana gelida.—"W. T.," who made inquiries some time ago respecting this plant, will find, on reference to authentic descriptions of the species of Gentian, that whilst G. gelida approaches somewhat near to the habit of G. septemfida in growth alone, it is nevertheless a distinct species, the principal habitat of the former being the Caucasus and Iberia, and of the latter, Persia, Georgia, and the sub-alpine regions of Altai. Its height is variously given from 6 to 12 inches, but, judging from what Grisebach, the highest authority upon this beautiful tribe, has written of the similarity that exists in the general features of the two plants, the relative dwarfer growth of G. gelida may be inferred, whilst he implies that G. septemfida had a more erect growth at the height he specifies, viz., 1 ft. It will satisfy the wishes of future inquirers if we state that Grisebach describes the flowers as borne in terminal few-flowered clusters, and of being of a cream or whitish-yellow colour. Dietrich, though a less reliable authority, confirms Grisebach's description as based upon the original character of the species by Bieberstein. The confusion and very general error into which many cultivators have been led respecting this rare species may, no doubt, be principally traced to the plant figured for it in "Paxton's Magazine of Botany," vol. vii. p. 5, which is a blue-flowered form which we do not recognise as a species, and though presenting the features of leaf-growth seen in the allied forms of G. septemfida, in respect to its assumed name it is a gross misnomer.—E. G. Henderson & Son, *Wellington Road Nursery, St. John's Wood.*

NOTES OF THE WEEK.

—— We hear of the erection of Winter Gardens in many places, and with regret, for the winter-garden usually turns out to be a species of elaborate public-house, with a few dusty plants here and there; such places have little in common with gardens of any kind; they only serve to degrade the name.

—— M. Fancon's flooding system of destroying the Phylloxera *i.e.*, submerging the Vines six or eight weeks in autumn, is reported to have been perfectly successful during the past season. His Vines have been exempt, while those of his neighbours have been nearly destroyed.

—— The fogs which we have had recently have been very destructive to the flowers of Phalænopsids and other warm-house Orchids, but what are called cool Orchids have not suffered so severely. The disastrous effects to which we allude are, we trust, confined to London and its suburbs.

—— Flowering plants of the common Laurustinus, grown as standards, are now very ornamental in the Royal Exotic Nursery at Chelsea, as are also scarlet and orange-berried Aucubas of various kinds. For the decoration of greenhouses or cool conservatories in winter, these plants are well worth attention.

—— Clumps of the broad-leaved Saxifrage are flowering freely just now in pots under glass at Kew. S. ciliata also forces well, and many more hardy perennials of a similar description, such as Christmas Roses, Solomon's Seal, Iris reticulata, and others, when subjected to a little heat, form excellent plants for winter and early spring decoration in greenhouses and conservatories.

—— We read in a paragraph, which is now going the round of the papers, that "a height of 200 ft. is attained by the Umbrella Pines of Italy. In Sclavonia the Silver Fir (Abies pectinata) attains an ordinary height of 275 feet." Will any reader acquainted with the forests of the countries alluded to inform us if these statements be correct? If so, California need no longer be considered a wonderland for high trees. We believe the statement was originally published in the "Edinburgh Review."

—— Mr. Hunter, of Lambton Castle, in addition to being a great Grape grower, is also a raiser of varieties of Pine Apple. He states (in "The Gardener") that his first batch of seedlings numbered thirty varieties, which were raised from seed accidentally discovered in a fruit. Since then he has systematically and successfully fertilised the flowers of the Pine Apple and has obtained seeds. He is still continuing his experiments in the direction of cross-fertilisation, and deserves success. "It takes twelve years at least to raise a stock of a single Pine Apple."

—— Those who keep records of heat, wind, and rain, will be glad to learn that Mr. Crooks, F.R.S., has recently perfected an instrument for measuring and recording the quantity of light which falls in any particular locality. It is well known that a certain mean temperature suits certain plants, and it is equally well known that, while some plants luxuriate in bright light, others like shade. It therefore appears to us that this instrument, which is called a lucerometer, will throw light on many points in the culture of plants not before noted.

—— Among Orchids in bloom at Kew is Dendrobium heterocarpum, which is one of the sweetest of all Dendrobes; also Vanda suavis, bearing three spikes, and a very large and richly coloured variety of Lycaste Skinneri, furnished with four flowers. Associated with these was likewise Ada aurantiaca, bearing three spikes of rich orange or rather vermilion-tinted flowers. This plant deserves a place in every collection of cool Orchids, and is especially useful for grouping along with flower-spikes af the finer kinds of Odontoglots, such as Pescatore's, Roezl's, the old Cannabar-blotched Odontoglossum cordatum, and Alexandræ. Among other Orchids was a strong plant of Oncidium serratum, bearing a long flexuose spike of brown golden-fringed flowers.

—— The rock-work in the tanks at the new Westminster Aquarium, according to Nature, contains a considerable amount of Portland oolite. We understand that it was purchased from the ruins of the Colosseum, Regent's Park, as a sandstone, and it appears to have been introduced into salt and fresh-water tanks alike without investigation as to how far it is suitable. There is, in addition, a good supply of carboniferous limestone used, and in considering the conditions, it must be remembered that the water circulates constantly from tank to tank, so that the carbonate of lime will be just as present to all the inhabitants of the aquarium as to the Lamellibranchs and others it might benefit. Perhaps some of our readers can throw light on this matter, as it is not without importance to the horticulturist.

RIDGE-AND-FURROW SYSTEM OF ASPARAGUS GROWING.

Perfect success in the cultivation of Asparagus is not always assured to the most painstaking cultivator, for it is a vegetable with marked predilections for certain combinations of soil, sub-soil, and climate, that cannot in many cases be exactly imitated; indeed, I have seen better Asparagus exhibited by cottagers, and cut from beds formed with little adventitious aid, than was produced by beds made with great care and skill, and highly fertilised. In the one case, Nature had spread out her composts of rich alluvium on deposits of silt or gravel that permitted perfect, but not too rapid drainage; in the other, strong garden soil of no great depth rested on wet and cold clay—and the influence of clay sub-soils can hardly be overcome, even when the surface-soil is re-made and brought from more favoured localities. Independent of the close character of the soil, which is inimical to the healthy development of the root, the absorption of heat is slow and superficial in effect. But, as the rich alluvial soils and the warm sandy loams so congenial to Asparagus are partial in their distribution, and less prevalent than clays and tenacious marls, and as gardens are of necessity formed on soils of every description, it follows that those who are unluckily obliged to deal with obdurate and unkind combinations must resort to schemes and contrivances that are calculated to meet the wants and necessities of the various kinds of vegetables grown upon them, and of Asparagus in particular. Cultivators of this esculent are not always successful, and I am sure I shall substantially help some by mentioning the system of growing it, first recommended by Mr. Niven, of Glasnevin (see p. 404, Vol. III.), which has the merit of being equally adapted to every class of soil and situation; it may be called the ridge-and-furrow system. It consists in throwing up a ridge, or series of ridges, of soil duly enriched, on a base of 3 ft., rising to a height of from 18 in. to 2 ft. The roots are placed on, or I may say astride, of this ridge before it is raised to its full height, and are finally covered with soil. Of course, there can be but one row of plants on the ridge, and these should be placed about 15 in. apart. The perfect simplicity of this plan, and its adaptability to the habits of the Asparagus plants, will be discovered during the first year of planting.—W. Ingram, *Belvoir.*

American Potatoes Degenerating.—Seed Potato importers say that American Potatoes rapidly degenerate in this country, and that keep up their present character, the seed must be annually imported This, however, is unnecessary in the case of the American Rose; for I am pretty confident that it does not degenerate. I have grown it for six successive years, and it was finer last year than on any preceding one. I am, however, aware that this variety is much affected by soil, and that, in many places, it is scarcely eatable. The competition for Lord Cathcart's prizes ought to settle the question as to the advisability of growing sorts suited to the particular locality in which they are planted; for, as will be seen, local kinds were superior, in almost every instance, to imported sorts grown beside them for competition. The aggregate returns in Lord Cathcart's competition appear to me to be anything but large; but in that of Messrs. Hooper, Mr. Ford's experience (see p. 533), fully confirms the weight of crop that may be grown from a given quantity of seed. The per-centage of diseased Potatoes, both of Eureka and Snowflake, is, however, the greatest that I have seen recorded in reference to any sort, either old or new, showing that new kinds enjoy no immunity in regard to disease.—James Groom, *Henham.*

Heeling-in Broccoli.—"A. D.'s" account of the market gardeners' practice in this matter is correct; but not so his views as regards the non-beneficial effects of laying or heeling-in Broccoli that has been grown in the much more confined quarters in the generality of private gardens, surrounded by high walls and most commonly having in them numbers of Apple and Pear trees, and the margins of the spaces devoted to vegetables which still further tend to make winter crops of all kinds less sturdy and able to bear severe frosts. In the large open fields occupied by market gardeners there is rarely anything to prevent the air having full sweep over everything planted thereon, and the hardy character which the vegetables acquire grown under such conditions is very different from that which they have in the majority of private gardens. This is one of the many instances occurring daily in gardening matters, that shows the necessity of practice under different conditions in order to enable cultivators to discriminate as to what to do and what not to do. There are, no doubt, many gardens throughout the country in which such precautions as laying Broccoli is not much needed in the generality of Winters. In some five gardens out of six that I have had to deal with in different parts of the country, if Broccoli were left with its roots unchecked through the autumn, and the winter happened to be severe a good portion of it was killed whereas such as was laid escaped. "A. D." may therefore rest assured that gardeners in private establishments, taking them generally, know what to do and what to leave undone as regards the different crops under their care.—T. Baines.

Grafting Aucubas.—I believe that failure in grafting these shrubs in many instances proceeds from a scrubby branch being taken to work upon instead of a young vigorous one, and, from the fact that the grafting is left too late in the season. I have grafted scores with very few failures, and believe I was the first to practise and recommend grafting the male on to the female plant, the success of which I published years ago in the columns of a contemporary. The best time to graft is in May, when the shoots are tender. I have some grafts of the male growing on some large bushes 2 ft. in thickness, and of a greater height, standing well above the female plants, and the result is, that the plants are completely covered with berries, which are now turning red and becoming plentiful. Some grafts which I inserted in a weakly part of the bush are merely existing with one or two flower-buds, while those I speak of above have nearly fifty buds of bloom; in fact, those on strong healthy shoots are making more growth than plants of the same kind are on their own roots. The mice are the worst enemies to this shrub and its berries; they peel the bark off the branches, and we often find large bushes disfigured in this way; they will also carry off the berries in a wholesale manner, pulling off the outer rind, and burying the hard kernel until it gets softened, which I suppose they then eat, for I never can find any seedlings under the shrubs; nor can I, after the berries are cleared from the bush, discover any peeled kernels. I have seen birds peck the berries, but never saw them swallow the whole berry. I shall keep watch, and see how the pheasants treat them this season. If they should like the berries the Aucuba, would be one of the best shrubs to plant as a cover for birds.—Henry Mills.

A Useful Tree.—From Bahia Consul Morgan sends a translation from a book published by the inspector of the Custom House of that port, in which he gives an account of a very remarkable tree, the Carnauba Palm, which grows in Brazil without any culture, and it is so hardy as to flourish in the most prolonged drought, and has often served at such times as the means of support to the population of more than one province. The top, when young, is an appreciable and nutritious article of food; and from this tree also wine, vinegar, and a saccharine matter are extracted, as well as a kind of gum similar in its taste and properties to Sago. From the wood musical instruments are made, as also tubs and pumps for water. The delicate fibrous substances of the pith of the stalk and its leaves make a good substitute for Cork. The roots have the same virtues as the Sarsaparilla. The pulp of the fruit is of an agreeable taste, and the nut, oily and emulsive, is roasted and then used as coffee by many persons. From the trunk are obtained strong fibres, and also a species of flour similar to Maizena, and a liquid resembling that of the Bahia Cocoa-nut. From the dried straw are made mats, hats, baskets, and brooms, and large quantities of the straw are exported to Europe for the manufacture of fine hats. Finally, from the leaves is produced the wax used in the manufacture of candles; and the export of this wax exceeds £162,000 a year in value. The inspector suggests that perhaps in no other country can there be found a plant applied to so many and varied purposes.

The Calabash Tree.—One of my people has just been telling me about a tree that, he said, "grew dishes." In his native islands—of the West Indies—he has seen a tree, in height and size resembling an Apple tree, called a Calabash tree. It has wedge-shaped leaves, large whitish fleshy blossoms, that grow—where do you think?—not like those of most other fruits, on the smaller and outermost branches, but on the trunk and big branches. The fruit that succeeds the flower is much like a common Gourd, only a good deal stronger, and it often measures 12 in. in diameter. The hard shell of this fruit is cut into various shapes by the natives, and is sometimes handsomely carved. It is made into drinking-cups, dishes, pails, and even pots. Yes, they say that these Calabashes actually can be used over the fire for boiling water, just as you would use a pot. But the Calabash pot collapses after a few such trials, and is unfit for further service. —St. Nicholas.

Large Seeds Best.—In an experiment made with Turnip seeds last autumn, it was found that the largest seeds produced the best plants and the largest Turnips, and that during the whole course of the experiment the plants from the large seeds preserved a conspicuous advantage over those from small seeds.

Trees in Whitechapel.—The Whitechapel Board of Works, and the other local authorities having control over the thoroughfare from Whitechapel to Bow, are to be commended for their persistent efforts to render this line of road more picturesque by the addition of trees on each side of the way. We regret, however, to say the emanations from the gas-pipes render the growth of the trees precarious.—"Metropolitan."

THE INDOOR GARDEN.

STATICES, TENDER AND HARDY.

For greenhouse and conservatory decoration Statices are invaluable, inasmuch as they bloom freely, remain in good condition for a long time, and are so easily cultivated that young plants of them may be grown quickly into fine specimens. Last year's growth made into cuttings now may be potted singly in thumb-pots in a mixture of leaf soil and sand, and placed in a close atmosphere in a top and bottom-heat of 65°, where they will root in a short time. Young plants may also be obtained by making a notch on the hard stems of old plants about 2 in. below the undermost leaves, and tying a small handful of Moss round the incision, which must be kept constantly moist, in order to induce young roots to be emitted. As soon as these make their appearance the stem should be severed from the parent plant just underneath the Moss, and it should be potted and treated for a short time as if it were a cutting. The propagation of Statices is the most difficult part of their culture; but, by following either of the methods just referred to, young plants may be had in abundance. They should, in all cases, be moved out of their cutting-pots before the roots become matted; and at this, and all subsequent shifts, the compost used should consist of loam, leaf-mould, peat, or well-rotted manure, and plenty of sharp silver sand. They may be shifted on when necessary until a 12 or 14-in. pot is employed for them, but it will take a good many years before that size is needed. They never require more than a greenhouse temperature at any time throughout the year; and, if not in bloom, they may be placed out-of-doors during the hottest summer months. Plants which have bloomed in summer and autumn should be kept somewhat dry at the root during winter, and, when re-potted in spring, they may be placed in a gentle heat until fresh growth is somewhat advanced. Statices often bloom even in 4-in. pots, and, by pinching, their time of flowering may be deferred, if a succession of bloom be desired. They blossom naturally from July until November; but, by pinching, they may be had much later even than that. The indoor varieties of them are not very numerous, and among them the best is S. profusa; it is not so robust as some of the others, but it forms a compact and beautiful plant, very suitable either for purposes of exhibition or for decoration, and it blooms superbly in winter. The flowers, which are bluish-purple and white, are everlasting; and, when cut, may be mixed with Immortelles. Among other good kinds may be mentioned S. Holfordii, S. arborea, S. brassicæfolia, S. imbricata, and S. macroptera, but I like S. profusa best. Among hardy sorts, which bloom principally in June, July, August, and September, are many with flowers finely diversified in colour, and in height they range from 4 to 15 in. The best for border culture are S. speciosa, blue; S. incana alba, white; S. cephalotes, rose; S. auriculæfolia, red; S. nana, blue; and S. bellidifolia, also blue. The last three are very dwarf, and well adapted for rock-work. All of them bloom profusely and grow freely in common garden soil. The dwarf varieties may be increased in spring by division, and the taller ones by means of cuttings struck in a cold frame. —J. Muir.

NEW DWARF RACE OF CINERARIAS.

This is a new strain of dwarf Cinerarias selected by MM. Vilmorin & Andrieux, of Paris. In diversity of colour, quality, and size of blooms the plants are described as equalling the best of the ordinary race, while much neater and dwarfer in habit—qualities that will be appreciated by the cultivator. The care which MM. Vilmorin are known to bestow on their trials and observations renders them worthy of the confidence of the horticultural world; and, no doubt, many will be induced to cultivate this new strain, of which the accompanying is an illustration by the careful artist, M. Godard.

Dwarf Cineraria.

Home-grown Oranges. — Those produced by trees planted out in the conservatory here are equal, at least in appearance, to the best imported fruit. The crop, which is nearly ripe, is abundant, thus combining, in a striking manner, the useful with the ornamental. The temperature of the house in which the trees are grown is kept at 50° in winter, but as cool as possible in summer, in order to preserve the beauty of the blossoms of flowering plants as long as possible. As the Orange tree is a very free flowerer, the fruit has to be thinned soon after it is set, or the tree would probably suffer from over-cropping. The fruit ripens the year after it is set, early or late, according to temperature. If intended for dessert, it is best gathered as soon as it is fully coloured. The trees do best planted out in prepared borders, as, in that case, the roots are not subject to sudden or extreme variation of temperature, like those in pots or tubs. This is a subject which should receive more attention than it hitherto has done; for it requires but little experience to see that the top of a plant will stand much greater fluctuations of temperature without injury than its roots. In the case of Pines, for instance, it is abundantly proved that they may be safely wintered in a very moderate temperature, if the roots be kept active by being planted out in a temperature approaching that of their native country; even our hardiest forest trees have their roots better protected than those of Orange trees in tubs in unheated structures.—James Groom, *Henham.*

FORCING ROSES.

The Rose is the best flower in the conservatory in the month of March; the atmosphere is cool and bracing, never over-hot; fire-heat is not wanted, and the Rose-bloom lasts long; it comes slowly forward from the bud and does not fade so suddenly as under a hot sun; and some think it even smells sweeter than in summer. To have pot-Rose blooms in March is a much severer trial to the plants which bear them than if the same plants had to perfect the crop in May. The question is sometimes asked why Roses like those staged at the great shows in May and June are not forthcoming in March; the reason is simply that, for the latter month they must be forced to a greater extent, and under less favourable conditions of light and air. The Rose, like many more hardy flowers, must be forced slowly; its energies must be economised, more especially if its previous management has not been of the best. Slow forcing is always to be preferred under any condition of the plant, as it enables it to produce the finest possible flowers. We once made a grave mistake with a very fine horse: we started late on a long journey which had to be performed against time; thoughtlessly, and in our anxiety, we allowed our driver to overtax the animal the first few miles, when he all but broke down: the journey was done within the time, but with sadly wasted energy, whereas if it had been done with more economy of the whip at first, and at a slower pace, the drive-up at the journey's end would have been more brilliant. So with the Rose: if a brilliant drive-up to the conservatory be desired, spare the whip in the forcing-house. The Rose is no exception among plants, especially those of a hard-wooded nature, which require a thorough good preparation: indeed, good management during the twelve months preceding the time it is intended to commence forcing should be faithfully carried out; and therefore we think it is not premature to call attention to the subject thus early. The success attending the forcing process, the amount and quality of the crop of flowers, will be found in direct proportion to the condition the plants are in from the previous summer's management; and the experienced grower can tell when and wherein his management has been at fault, should success not have been complete. Charles Lawson, a very robust and usually a sure and excellent forcing Rose, will, from the fact of his very stout constitution, provokingly give the grower the slip if his summer management have not been thoroughly performed. The rule should be with Roses as with Vines and Peach-trees—to preserve the foliage in good health free from insects, and keep the plants well supplied with nourishment, so that when they are enjoying the ripening influence of the sun they are not scorched and exhausted. From the very time the foliage is developed in the forcing-house till they shed their leaves in autumn, they must be a chief care. The period in the conservatory, if it be dark and ill-ventilated, is dangerous and often disastrous for the next season's crop: overcrowding should be avoided; the Rose-plants should have every advantage possible of sun and fresh air; this is often impracticable in dark, ill-ventilated conservatories, where small plants are necessarily far from the light: in such structures Roses must remain but a short space. A span-roofed show-house with elevated stages is the best position for them. Those now in the forcing-house with their foliage becoming well developed, and showing their flower-buds in a rudimentary state, should be supplied with a little weak liquid manure, until they have done blooming, provided they are not over-potted; the pots should, however, never be out of proportion to the size of the plants, but well filled with roots like Strawberry plants when introduced to force; they will flower better in this condition, and be more benefited by regular manure-waterings. Caution is necessary in removing Roses from the forcing-house to a cooler house, if such house be really cool and airy; if the change be too sudden as regards temperature, there is a danger of the buds turning yellow and dropping off, or at least proving all but abortive. They must have the benefit of an intermediate temperature for a few days, always taking care that they are near the light, as they quickly get drawn if in the least shaded. Green-fly is sure to be troublesome, and must be destroyed at once; sometimes the Rose-grub will make its appearance, and must be looked after at short intervals; it curls up the leaves and eats out the buds. It is, however, not a formidable enemy; a slight pinch of the suspected leaf between the finger and thumb settles it. Roses which have been forced must have constant attention after flowering in the matter of cleanliness, care that the foliage is not damaged, and a continuance of liquid manure up to the middle of May, when they may be stood out-of-doors thinly for a few weeks in a sheltered place. Early in June they will all require to be examined, re-potting those whose pots are well filled with roots, and where the size of the head justifies it, into pots two sizes larger; some may only require the drainage examined, and the effete soil removed from the surface and then top-dressed; some may require the ball of soil reduced, and placed into smaller pots. We prefer pot Roses to be on their own roots; but if any be on the Manetti, suckers must be looked sharply after. If there be a tendency in any plant to throw up many suckers, and the head be showing signs of decadence, the plant may be thrown to the rubbish-heap at once. The soil best suited to the Rose in pots is a light yellow loam, slightly inclining to clay, with a few bones, and a mixture of thoroughly rotten cow-manure. For Tea Roses a proportion of thoroughly decayed leaf-mould should be added. After potting they should be plunged in leaves or sawdust in a sheltered situation fully exposed to the sun, where they must be well supplied with water. They will soon start into growth, and will show flower-buds persistently—we refer to hybrid perpetual Roses; those buds should be pinched out as soon as they appear. If some should become top-heavy and likely to be tossed about by the wind, they must have one or more stakes attached to them. Towards the end of September, it will be found necessary to lift them out of the plunging materials, and during heavy rains lay the pots on their sides; or, better still, give them the shelter of glass by introducing them into a thoroughly ventilated glass screen or orchard-house, and keep them moderately dry at the roots, when the wood and foliage will ripen, and the latter drop. For the winter, we find it best to plunge them in the open air in the south, over the pots in coal-ashes on a dry bottom. It is as much a mistake to keep pot Roses too dry in winter, as it is for Vines, Peach-trees, or Strawberries in pots; over-dryness exhausts them. Probably, all things considered, a coal-pit would be the best place for them—they would not get too dry, nor be exposed to cold rains or frost. By Christmas the first lot should be pruned before introducing them to heat: all weak shoots should be cut out; they are useless in outdoor Roses, much more so in Roses to be forced; shortening medium growths well back to two or three buds. Strong shoots from near the bottom of the plants should be left two-thirds of their length. Much depends on the variety of the Rose; some are robust growers, even in pots, such as Charles Lawson, Baronne Rothschild, and Jules Margottin; these soon become large bushes. Some never grow strong though fine forcing Roses, yet require close pruning, such as La France. Before introducing into heat they must again be examined at the root to see if the drainage be right, and the surface top-dressed with rotten cow-manure. Our first lot is always started on an elevated stage in the early Peach-house; the slowly rising temperature of this house seems to suit them admirably. Syringe twice a-day with the Peach-trees, unless the weather be rainy or particularly dull, requiring very little water for some time, until the foliage becomes developed. Of varieties suited for forcing, there are none sweeter and more beautiful than the old Moss and common Cabbage Roses; they are, however, very much of one colour. Among hybrid perpetuals there is every variety of colour, from pure white in Baronne de Maynard, to the darkest crimson in Duc de Rohan. The following are a few very good varieties for forcing:—Duke of Edinburgh, Edward Morren, Fisher Holmes, John Hopper, Madame Alice Dureau, Madame C. Wood, Mdlle. Annie Wood, Senateur Vaisse, Alfred Colomb, Comtesse de Chabrillant, Coquette des Alpes, Dupuy Jamain, but really, all hybrid perpetual Roses force well.—"The Gardener."

Caraguata musaica.—A short time ago, says the "Illustration Horticole," we mentioned the flowering of this handsome Bromeliaceous plant, which, it will be remembered, was introduced by Mr. Linden, and sent out under the provisional name of Tillandsia musaica. There is now no longer any doubt that the presumed Tillandsia is a true Caraguata, and henceforward it will bear the name of musaica. At some future time we shall publish a corrected description of the species, which we have submitted to Professor Morren, who, as is well known, is learned in all that appertains to the Bromeliaceæ, and who is just putting the finishing touch to his work on the tribe Tillandsiæ, for early publication.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Paint for Hot-water Pipes.—If "R. F. J." (see p. 120) paints his pipes with what is known as Brunswick Black, he will find it to answer the purpose perfectly, and to be productive of no bad results.—J. Muir.

—— As paint or varnish for hot-water pipes, I find nothing to answer so well as lamp-black and boiled linseed oil. The lamp-black should be made red-hot, and when cooled should be beaten up very fine, adding oil until the mixture is sufficiently thin to be applied with a painter's brush. The pipes should be warm during the application.—Richard Nisbet, *Aswarby Park.*

Preserving Woodwork of Glass Houses.—The chief cause of decay in forcing houses is allowing moisture to get into the wood, through neglecting to paint it and not providing means for the ready escape of water from the roof. Where the front lights slide in a groove—there water is sure to collect, if both sides be solid; but if stout wooden pegs be used on the outside or sloping portion of the sill, they keep the sill dry. Badly-constructed houses are dear at any price.—James Groom, *Henham.*

THE FRUIT GARDEN.

TOP-DRESSING FRUIT TREES.

There is no operation in the garden more recommended, or one which is of more general utility, than top-dressing the soil as a means of enriching it for the benefit of the roots of trees. The richer the material used, the more effectual it is for good. On the other hand, the mixture of manure with the soil in which fruit trees grow is generally deprecated, yet we are constantly hearing of the great fruit-growers for the London market systematically manuring the land in which their fruit trees are growing, which fact necessarily leads to the inquiry, Which is the most judicious practice, and most fraught with ultimate success? On the one hand, when the ground is well manured, there are rocks ahead to be avoided in the shape of coarse immature growth, canker, and scanty crops; on the other, where manure is eschewed, there are dwindling trees, small-sized, or cracked and spotted fruit. To make a reasonable deduction between the two systems, it may be safely assumed that the market gardener knows which pays him best. If common sense be appealed to, it might be inferred that heavy and regular crops could not be obtained from fruit trees without liberal culture, no more than from beds of Strawberries, Raspberries, or other bush fruits. A liberal use of manure no doubt has the effect of encouraging an abundant growth of wood; and, however much it may be desirable in many circumstances to repress this growth, still the balance is in favour of a liberal use of manure, with all its supposed disadvantages. The growth of fruit trees can be modified and regulated by a judicious plan of summer-pruning and training in the case of dwarf bushes and espalier trees, thereby inducing a fruitful habit, even with vigorous trees. Orchard trees will take care of themselves at the top, with an occasional thinning of the branches. The half-starved tree will be more floriferous in spring than the full-fed tree, and may even yield fruit in greater quantity; but, in point of quality, there will be no comparison. Fruit trees in private gardens are too often left to themselves, so far as attention to their requirements at the roots are concerned. Accidental circumstances may sometimes be in their favour, as, for instance, when the land has been heavily dressed for some green crop in contiguity to the trees, they receiving a passing advantage from the manure not intended for them. I feel self-accused in this respect; and, in illustration of the remarks already made, will mention first the case of three long lines of dwarf Apple trees, which have been abundantly fed in the chance way adverted to, the border being cropped with such things as Lettuces, Coleworts, Endive, and Shallots, which received heavy dressings of manure. The trees grow very strongly, and the crops are moderate, but always of the largest size; the trees are kept dwarf and spreading by having their branches annually tied down to a hoop of strong wire fastened to a circle of stumps driven into the soil after the manner that a specimen plant would be trained in a pot; the annual shoots are not much shortened, but the old wood is cut out; these young bent-down annual growths invariably make abundance of fruit-bearing spurs, and when not pruned back, the tied-down shoots absorb the energies of the trees. This tying process necessitates considerable labour, but is amply repaid by the crop and the neat-looking appearance of drooping trees. Again, several long lines of espalier Pear trees were planted, and trained to strong wires stretched between the usual cast-iron columns. They all received the same treatment at planting time, each had half a load of yellow loam to start with, and it was thought this would be sufficient for their welfare for several years to come. Circumstances seemed equally in favour of the whole at the time of planting, but, as years passed on it became evident that the growth and bearing qualities of the trees were altogether dependent on the management the borders received for their annual crops. A piece of the Pear tree borders was annually used for the culture of summer Lettuce, and consequently heavily manured; at this place the espalier trees shot ahead of the others, and bore fruit of superior quality. Another piece of the same border was occupied chiefly with spring-flowering plants for the flower garden, and with plants for early forcing, such as Deutzias, Dielytras, Pinks, &c., which received no manure whatever, only occasionally some fresh soil; the trees soon began to stagnate and fruit indifferently, the greater portion of the borders were occupied with herbaceous plants, annuals, and summer flowers for cutting, which were annually dressed with some light manure, such as old Mushroom manure. The difference in the growth of the trees, and of their fruiting qualities, was so strikingly in favour of the manured portion that it was resolved to take the whole of the others in hand, and see what could be done to assist them. With this purpose in view, the whole of the borders were cleared, for the time being, of all plants, the soil over the roots of the tree removed, from the boles outwards as far as fibrous roots were found, to a distance of from 6 to 8 ft.; the roots were not disturbed, only laid bare as far as possible, and each tree had one or more barrow-loads of very rotten, cool, horse-manure, spread equally all over its roots; over that again was spread a layer of half-rotten cow-manure; the roots, it may be remarked, were found to have laid hold of the fresh yellow loam, but it evidently was not sufficiently rich of itself to maintain the vigour of the trees. After the top-dressings the soil was partially returned over the manure, and the ground re-stocked with plants. The result is looked forward to with great interest, as the carrying out of the idea was undertaken from the cultural necessity of the case, and was prompted by the improved condition of the trees growing in the manured border. Top-dressing can be applied to orchard trees on Grass with the perfect confidence that improved crops will follow, although the Grass itself may be the first to show the benefit of the top-dressing. There is before us an instance of an orchard of Apple trees planted on thin gravelly soil; the trees were covered with Moss and stunted, although not by any means old (about twenty-five years). The Grass of this orchard had been mown year after year for the sake of tidiness, thus exhausting the soil more than the trees did. A rather rough system of top-dressing was inaugurated at a sacrifice of appearances, all sorts of refuse material were wheeled or carted into the orchard and spread over the surface, such as sifted coal ashes, old decayed tan, the old soil and rubbish from the potting bench, sweepings and scrapings of roads, &c., until a considerable thickness of material had accumulated. The first result was a troublesome growth of Grass, which was kept down with the scythe, but not cleared away—on the contrary, allowed to rot on the surface. By-and-by the trees began to emit quantities of young roots from the lower parts of their boles into the top-dressing, and the second result was that the next crop of Apples was considerably larger and of a much improved quality; the branches were severely thinned to admit light and air, well dusted with quick lime to remove Moss and Lichens, and they were amply repaid annually by this simple attention.

W. D. C.

CRACKED PEARS.

Some time ago, we had splendid Pears, but for the last three or four years they have become cracked and hide-bound when about half their proper size, have no flavour, and do not keep so well as they used to do. The trees are about twenty years old, have been root-pruned, and all sorts of recommendations have been followed in order to resuscitate them, such as fresh earth, burnt ashes, old irons buried at the roots, roots lifted, mulched, and watered, and yet nothing has done the least good. Some young trees, too, are worse than the old ones. Surely some one wise in gardening matters ought to know what should be done to effect a cure. I propose to slit the bark longitudinally, as I fancy it is too hard to allow the sap to ascend in sufficient quantities to enable the fruit to swell. Some say it is the result of a cold spring, hail, wind, &c.; but the weather is no worse than it was ten years ago. I therefore trust that some remedy for my trees may be found. G. G.

Tallow.

[Everything seems to have been done to these Pear trees in the way of root-pruning and renewing the soil about them, but without the desired effect on the fruit. There is little doubt but that the Pear-mildew is the cause of the fruit cracking, and this year it has been more prevalent than usual, owing to the very wet summer and autumn. This year with me the Beurré Diel and Glou Morceau were so cracked by mildew that they were unfit for dessert; also some other kinds not so valuable. I have headed some of the trees down, and scraped the rough bark off, and afterwards painted the branches with a mixture of soft soap, sulphur, and lime, with some clay in it to make the composition stick. Where the trees are supposed to be hide-bound, scoring the strong branches longitudinally will do them good, as I often serve Peach and Nectarine trees in this way with good results to the circulation of the sap. The Pear-mould is more to be seen on trees grown on strong undrained soils, and more on standards than on wall trees. I should advise some of the Pear trees at Glanatore to be painted with the above mixture; and, to be effectual all the strong branches should have the rough bark thoroughly scraped before it is put on.—William Tillery.]

Preserving the Flavour of Apples.—Apples ought to have as sweet an air in their winter home as any other kind of food. They take in, very readily, the musty odours of close, moist cellars that are little better than vegetable pits; and the difference between a crisp, high-flavoured Apple, and one that is flabby and poor, is often simply the difference in the storage which they have had. This fruit needs gentle handling, a cool, dry room, just safely above the freezing point, and removal from all rank vegetables or unpleasant odours.

Gooseberries for Exhibition.—As this is the season for pruning Gooseberry trees, it should be borne in mind that there is a material difference to be observed in the pruning of those trees upon which it is intended to grow large fruits for exhibition and those from which fruits for the dessert or culinary purposes only are required. One of the leading exhibitors in the north thus sets forth in a contemporary the practice for pruning trees, the fruit of which is required for show:—"Not nearly so much wood should be left when good fruit is wanted for exhibition as should be allowed to remain under ordinary circumstances. Indeed, where large fruit is desired, no weak shoots whatever must be left, and the strongest should be shortened to within 5 or 6 in. of the previous year's growth. The superabundant wood should be taken off in such a manner that the strong shall be left at regular distances from each other, and if of these many be suffered to remain, the plant will become overcrowded with foliage and new wood, and the fruit will therefore be deprived of the requisite amount of light and air." While thinning, in all cases to an outside bud, do not cut all the shoots clean off, but leave about half an inch at the bottom of some to form what are called fruiting spurs. The leading points of excellence which belong to a show Gooseberry are, a smooth and thin skin, round form, sweet luscious pulp, long thin stalk, large size, and small nose, *i.e.*, the decayed blossom. As to colour, red is esteemed first, yellow second, green third, white last. With show Gooseberries weight, and not beauty, is the object. A Gooseberry that is a little rough is not considered imperfect at an exhibition where the awards are given for the heaviest berries; but where handsome berries are required, this roughness is considered an imperfection.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Position of Span-roofed Vinery.—What should be the position of a span-roofed Vinery as regards the sun? I am about building one, and shall be glad of the information.—L. I. S. [It should run due north and south, so that one side catches the morning and the other the evening sun.]

Planting Orchards (W. R. P.).—We should trench the ground at least 18 in. deep, and loosen the bottom of the trench another spit, but not bring to the surface much of the previously unmoved soil. It would be desirable to give plenty of rotted manure, well mixed with the soil used for planting.

Grafting Vines (Amateur).—This should be done when the house is started, putting in the grafts by whip-grafting, and on the upper side of the rods. Have two eyes to the scion, using good grafting wax in preference to clay, bind over the junction with a little Moss, and sprinkle with water occasionally.

The Reinette du Canada Apple.—Some of the finest Apples seen in Covent Garden Market this winter have been the Reinette du Canada. This variety is a capital grower, and, as the tree comes into flower about a month later than most others, a crop is almost certain. Gloria Mundi, grown in Hertfordshire, has also been very fine this season. The fruit keeps well, and one is sometimes large enough for a full-sized dumpling.—F.

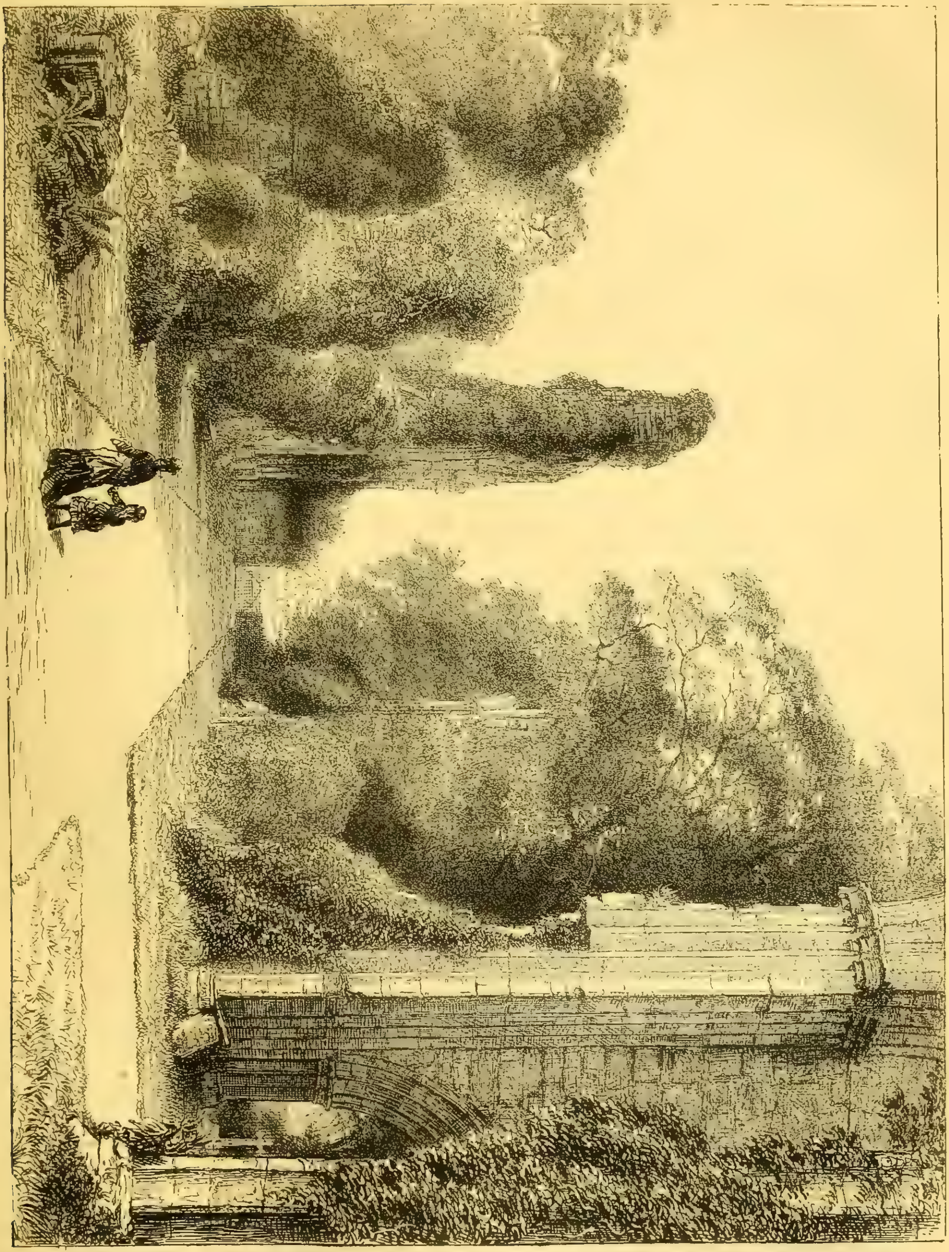
Autumn-fruiting Raspberries (see p. 113).—Some years ago I had the following kinds from Messrs. Rivers, Sawbridgeworth, and I can recommend them as the best in cultivation, viz., Merveille de Quatre Saisons Rouge, or October Red, Merveille de Quatre Saisons Jaune, or October Yellow. These two varieties fruit freely in warm dry summers and autumns. There is a black autumn-fruiting variety likewise to be purchased, but it is only a shy fruiter, and not of good flavour.—William Tillery, *Welbeck*.

The Wellington Apple.—This is one of our best late-keeping culinary Apples, lasting, as it does, in good condition almost as long as any Apple with which I am acquainted; and, when baked, scarcely changing colour. I observe that sour Apples are much superior in this respect to sweet ones, which almost invariably assume a dull dark colour in cooking. This sort is also an abundant cropper, hardy, and equally satisfactory as a standard, pyramid, or espalier.—J. Groom, *Henham Hall*.

BAYHAM ABBEY GARDENS.

The fine old ruins that still exist at Bayham are well worth notice, not only as remnants of the architecture of the twelfth century, but also as illustrating how ancient buildings of that kind may be rendered interesting in park or garden scenery. Our engraving gives what may be called the principal view of the structure as it now stands; but it conveys but a faint idea of the freshness, even in winter, of the green turf that surrounds it, or of the beauty of the Ivy which clusters in heavy masses around its old gables and ruined towers; while in spring, we are told the crumbling walls are, in many places, golden with Wallflowers, which have naturalised themselves here, as on many other monastic ruins. Later in the season, Banksian and other evergreen Roses peep out from these Ivy-covered walls, which in autumn are rendered brilliant by means of Virginian Creeper. These old remnants of a bygone age are situated in a sheltered valley, hemmed in on all sides by well-wooded hills; close to the ruins stands the old mansion, in the grounds connected with which we remarked some very fine old trees, most of them grey with Lichen. Here a Tulip tree with a forked trunk is fully 65 ft. in height, and close beside it grows a Scotch Fir, 6 or 8 ft. taller, its smooth red bole being nearly 2 ft. in diameter. Here also is a veritable wild garden of Roses and other flowering shrubs, allowed to ramble at their own sweet will. Among other trees we observed near the entrance to the ruins an old Pollard Ash—now in the last stage of decay; but one which has evidently been, in its time, a noble specimen—with a bole 10 or 12 ft. in diameter. Associated with it was likewise a very old Cornelian Cherry (Cornus mascula) about 15 ft. in height, much cankered and smothered with grey Lichen, yet well set with blossom-buds. The pulpy fruits of this tree, which resemble a Cherry in colour, grow to about the size of Olives, for which, in the olden time, they were not unfrequently substituted. The flowers are still sometimes used for flavouring sherbet, and in Germany are eaten in the form of sweetmeats or tarts. On still, sunny days a beautiful view of the ancient gateway leading to the ruins may be obtained from the old Tulip tree just mentioned, the arched masonry reflected in the water of the river, which formerly formed the moat, contributing not a little to the effect. The grounds attached to the new mansion, which stands on a hillside at a considerable elevation above the ruined priory just alluded to are but newly planted, but the park-like scenery for many miles around is beautifully undulated and well wooded. The prevailing trees in the surrounding woods are Oak, Ash, Spruce Firs, Birch, Scotch Pine, Beech, and a few Chestnuts. Larches are also numerous, and among these we noted some very fine specimens. Some of the largest of the Spruce Firs are also striking specimens, being drooping in habit and feathered to the ground with branches. From some stumps of Spanish Chestnut felled a year or two ago young growths had pushed up in the form of round masses 6 or 8 ft. in height, and these being still clothed with russet-coloured foliage had a singular effect contrasted with their green surroundings in the shape of Hollies, Spruce Firs, and Yews.

Kitchen Garden.—An old kitchen garden lies near the ruins of the old priory. In this two or three beds of Asparagus are known to have occupied their present site undisturbed considerably over a century, and still they yield excellent crops. It is probable that as the old plants die out self-sown seedlings have occupied their places, their vigour being insured by copious mulchings of well-rotted manure. Be this as it may, the produce from these old beds is preferred to that from newer ones on account of its superior flavour. The new kitchen garden occupies the sunny slope of a hill above the mansion, and is a little over 2 acres in extent. It is bisected each way by convenient walks, and the plant and fruit-houses occupy the south side of the back wall, the whole being surrounded by fruit tree and vegetable borders. The walls are well furnished with healthy young trees, such as choice Pears, Plums, Cherries, and Peaches, and the intersecting walks are also margined with select varieties of bush or pyramidal Apples and Pears. The soil here is a light-yellowish loam on red sandstone rock, and the situation being elevated, the effects of spring frosts are but slightly felt.



VIEW IN THE GARDENS AT BAYHAM ABBEY, KENT.

Plant and Fruit Houses.—These, which have scarcely been erected two years, are light, commodious, and well-finished structures. An early Peach-house and two Vineries are well stocked with healthy Peach trees and Vines, the latter especially having made vigorous, short-jointed, and well-ripened growth. In the stoves we noted, among other plants, specimens of Alocasia macrorhiza variegata, 12 ft. through, Maranta (Calathea) zebrina, 7 ft., and some good Dracænas, Gymnogrammas, Pandanus, and Livistonas. The roof is partly covered with Allamandas, and in one of the houses Bougainvillea glabra grows and flowers remarkably well, and even now it bears several trusses of its glowing mauve-coloured bracts. This plant is so distinct in habit and colour from anything else that it well deserves a place in every warm plant-house. Small decorative plants, such as Ferns, Cyclamens, scarlet-berried Solanums, Dracænas, Primulas, Tree Carnations, Aphelandra Roezlii, &c., are extensively grown for drawing-room and dinner-table decoration, while Gardenias, Euphorbia jacquiniæflora, Dendrobium nobile, Bougainvilleas, tree Carnations, Narcissus, and Hyacinths, come in conveniently for cut flowers. Mr. Johnstone finds Aphelandra Roezlii very useful, small plants in a 60-sized pot being strikingly effective when in bloom, and as their flowers open in gradual succession up the erect spike, they last in beauty several weeks. It may not be generally known that this plant seeds freely, and that this is the best method of propagating a stock of it, as the seed germinates readily, and the young plants grow freely in a warm stove, while their winter-blooming habit makes them still more valuable.

TREES AND SHRUBS.

BEST TIME FOR TRANSPLANTING TREES AND SHRUBS.

On this much-disputed subject even practical planters of considerable experience differ materially. Many will, however, be ready to assert that, with proper care and the necessary appliances, transplanting may be successfully accomplished at any season. But the bare assertion, although it may be true, fails, nevertheless, to answer the question. If trees and shrubs of considerable dimensions could be transplanted from one spot to another without injury to the roots, or the destruction of a portion of their delicate fibres or feeding organs, it might then be immaterial at what season the operation was performed. But as these easily-injured and delicate organs, in their search for suitable food, rapidly extend themselves to considerable distances from their stems, it is difficult, if not impossible to remove them without breaking off a considerable portion of these feeding organs; and, although the roots are, doubtless, possessed of the power of absorbing nutriment from the soil, still the inevitable sacrifice of a considerable portion of rootlets and fibres must necessarily give a check to, or inflict an injury upon, the plants subjected to the operation of transplantation. Hence the question naturally arises, When are plants generally in the most favourable condition to resist the effects of this injury, and to commence the process of reparation? Some planters recommend early autumn planting; others prefer the spring, more particularly for evergreens; while others recommend the performance of the operation during mid-winter, or when the plants are in a dormant condition. The latter practice, which is the least worthy of recommendation, I will first endeavour to consider; and it must, I think, be evident that, should the roots of plants get seriously injured during transplantation, the healing process cannot be expected to proceed otherwise than slowly, if at all, during winter. There is even reason to apprehend danger of ultimate decay being induced by the low temperature of the surrounding soil and the inactive condition of the plants. It will, of course, be understood that these remarks apply to the transplanting of trees and shrubs which have attained to considerable dimensions, and whose roots have not for some time been disturbed, and not to the transplanting of ordinary nursery stock, which has annually been subjected to removal, as well as to judicious root-pruning, which has the effect of inducing the production of rootlets, or feeders, near to the stems, whereby transplantion is rendered comparatively safe at almost any time from the end of October to the beginning of May. As in some degree illustrative of the ill effects resulting from the disturbance and consequent mutilation of roots at a season when the plants operated upon must necessarily remain for some time in a dormant condition, may be mentioned the circumstance of potting up a number of deciduous flowering shrubs, during the latter part of December, consisting of Persian Lilacs, Weigelas, Deutzias, Spiræas, &c., about one-half of which were at once placed in a forcing-house of moderate temperature, while the other moiety were placed in a cold pit with the view of forming a succession, and, after remaining there for about a month, were shelved in the same house as the former, and subjected to a similar temperature, but did not by any means succeed so well, although they had the advantage of increased light and a more advanced season. The plants which were introduced into a growing temperature as soon as they were potted at once commenced the process of reparation; while, in the others, a suspension of vital power was induced by the low temperature, and the healing process was not only retarded, but decay of the injured roots had in many instances taken place, and this was distinctly visible on their removal from the pots.

The practice of late spring-planting appears to find favour with some planters, more particularly as regards evergreens, which differ to some extent from deciduous trees, inasmuch as their roots are generally in a more active condition during winter, on account of the continuous demand made upon them by their leaves. There is, however, no absolute rest for deciduous plants more than for evergreens, unless it be during periods when the soil in which they are placed is in a frost-bound condition, as, in the middle of winter, the gradual development of buds is perceptible when the weather is open; in fact, there does not appear to be any reason for supposing that the best season for transplanting evergreens is not also the best for moving deciduous trees. Much, however, of the occasional success which attends late spring-planting is to be ascribed to local or other circumstances. In some localities, where the soil is of a stiff and retentive nature, trees and shrubs, whether deciduous or evergreen, may be lifted with balls of earth adhering to their roots, of dimensions corresponding to the size of the plants; and if they be re-planted with as little delay as possible, to prevent any injury from being dried up by the sun or wind, the balls of earth will generally contain a sufficient undisturbed portion of roots and rootlets to supply for a time the swelling buds or foliage of the plants; and, should the weather set in mild and damp, the plants will be materially assisted in forming fresh roots in abundance. In many less favoured localities, however, where the soil is of so light and sandy a nature that it is impossible to get a sufficient portion of it to adhere to the roots, and where cutting east winds generally prevail during the greater part of April and May, together with the rainfall of the former month, the smallest of any month in the year, late spring can hardly be recommended as the best season to transplant trees and shrubs. Many years ago I superintended the transplanting a number of the more common kinds of Conifers, during the early part of the month of August, and during very dry and warm weather. The trees were mostly from 10 to 15 ft. in height, and, as far as I can recollect, not one of them died, although during the hot sunshine of each day, for some considerable time, the leading as well as the other young shoots hung down quite limp; but the trees were carefully mulched and syringed every evening, and the shoots were always observed to be quite erect in the mornings. All the trees succeeded equally well with others which were transplanted during the following November. Still the month of August can hardly be recommended as the best season for removing coniferous trees, if for no other reason than that each tree required at least three times the amount of labour that would have been necessary if the operation had been delayed until later in the year. It may, I think, be fairly assumed that the best time to transplant deciduous trees and shrubs is as soon as the leaves have fallen, though it may not always be necessary to wait until the middle of October, between which time and the end of November may also be considered as the best for the transplantation of evergreens of all sorts, their season of growth being then completed, their excitability exhausted; and they are, as nearly as possible, in a condition of rest, with the demand upon their roots at a minimum. To the opinions already expressed, as to the most suitable season for performing the operation of transplantation, a few words may be added. At whatever season this is effected, it is of importance that the roots of the plants should be exposed for as short a time as possible to the drying influences of sun and wind. This is more particularly necessary when the operation is performed late in spring. It is also incumbent to preserve as many of the fibres as possible, and to accomplish this it is necessary to surround the stem of the plant about to be operated upon by a trench, at a distance from the stem of the plant corresponding to its dimensions, carefully using a fork for the purpose of reducing the ball of earth to the dimensions necessary to enable it to be removed to its destination, and at the same time to preserve as many of the fibrous roots as possible. When it is found necessary to amputate large roots, this should be done with a sharp knife, cutting from the underside, as such wounds will readily heal, the same as in the case of a cutting, and will, in like manner rapidly produce a redundance of healthy young fibres. In all cases, where the specimens to be moved are of considerable size, the employment of one of the many mechanical contrivances (such as Barron's transplanting machine) will be advisable, and, before placing the plant in its intended position, the soil under and around it should previously have been trenched or well loosened up. It is seldom advisable to dig out a pit or hole for the reception of the roots, more especially if the plant be of considerable size, when it should merely be placed upon the surface of the soil, or but slightly under it, the roots carefully spread out, and covered with a portion of light rich soil. Roots have a natural tendency to grow downwards, and it is obviously more to their advantage to have good or surface soil to grow into than to be placed in contact with the subsoil, which is generally the case when the roots of plants are placed in pits or holes. Before finishing the operation of planting, means should be taken to steady the plants by means of a few rough strong stakes driven firmly into the soil, close to the ball of earth containing the roots. The heads of these stakes should be upon a level with the upper surface of this ball, and to them should be securely nailed the ends of two or more rails, which should cross and press upon the upper surface of the ball, and this will generally be found to be all that will be required; but, should that support not be sufficient, recourse should be had to guy ropes; avoid, if possible, the placing of stakes close to the stems of trees, which are very likely to injure the bark. Enough earth should now be placed over and around the roots to form a basin, slightly exceeding in diameter the extent of the roots, and into this should be dashed a sufficiency of water, which will have the effect of thoroughly embedding the roots and fibres in the soil; and, when the water has been absorbed and the soil become somewhat dry, the re-planting may be completed. When this is done, the plant will appear to stand upon a slight mound or elevation, which will enhance its appearance, as well as be an advantage to it in other respects, more especially should the situation in which it has been placed be in any degree damp, or the soil of a retentive nature.

P. Grieve.

BERRY-BEARING AUCUBAS.

I willingly comply with "W. D.'s" request. I budded my female Aucubas in the month of August in precisely the same manner as I bud my Roses, choosing a vigorous shoot of the second or third year in which to insert the bud. I cannot inform "W. D." as to the best season for grafting the Aucuba, for the grafts I inserted at the same period did not grow; but I should say that now, or even earlier than this, would be the most likely season to succeed: doubtless some of your readers could supply some information upon this point; nearly all the buds I inserted grew. As I have frequently heard it remarked that it is difficult to get the Aucuba seed to grow, it may be useful to my brother amateurs to tell them how it can be easily done. First gather the berries as soon as they turn red, and sow immediately as follows:—Place a frame, single or two-light, according to the number of berries desired to sow, in a sunny aspect upon a good rich soil; make a compost 9 in. thick, consisting of equal parts of peat, sandy loam, and leaf-mould; press it down level, then strew the berries evenly over its surface about 3 in. apart, and cover them with 2 or 3 in. of the same compost; keep the lights off during the summer, and be careful to water whenever dry. The young plants will commence to make their appearance about the beginning of October, and will continue to come up all through the winter; therefore, about the end of September, if the weather become cold, the lights must be put over them and the frost kept out by means of matting or straw, but the covering should be removed to admit sun and light in mild weather. As the young plants will require slight protection for a year or two, they should either be allowed to remain in the frame or be potted, so that they could be placed in a pit or cool house on the approach of winter; for, if planted out before their third spring, they are liable to perish, if the winter prove severe, or, what is more trying, alternating frosts and thaws. J. Denny.

Stoke Newington.

The Natural Age of Fruit Trees.—It seems to be the common belief that there is no limit to the natural age of Apple trees. But this is certainly a mistake. We all know that the Peach tree usually fails to be profitable at 12 to 15 years of age, and the Cherry and Plum average only 20 to 30 years; the Pear, in favourable circumstances, 40 to 50 years—in rare cases a much longer time; so, also, the Apple tree has its natural limit, and although, like man's life, the duration of the period of health and vigour varies greatly, according to constitution, nurture, climate, &c., its approaching termination is clearly indicated by signs of debility and disease. On very deep and favourable soils, and, where the trees are not damaged by severity of climate, Apple orchards are occasionally found bearing fair crops of fruit at 80 to 100 years of age, but these are nearly as rare as for their owners to live so long. Very few soils are of the best kind for an orchard, and everywhere our climate is either too warm or at times too cold for the best health of the trees. Injury by severe cold blackening all the wood, I am convinced is a very common cause of the premature failure of orchards; but starvation, in consequence of exhaustion of the soil, is still more common, and this is a more difficult matter to remedy than most people suppose, especially when trees have attained full-bearing size.—"Cultivator."

Flowering-time of Willows.—Palm Sunday and Willows are quite orthodox; but I was surprised, when making my notes on Christmas Day, to find Salix violacea with catkins. Writing to ask Mr. Scaling if this were unusual, he answers that with him at Nottingham, "S. violacea showed catkins on the 28th of October, S. cœrulea on the 18th of November, S. daphnoides on the 20th of December, S. Caprea on the 25th of that month, and S. nervosa and S. purpurea on the 6th of January. In November, the S. angustifolia still had the catkins hanging belonging to the season 1875, and the two first-named on this list had shown the coming season of bloom, thus bridging over the entire year." The same can be said of hardy Heaths, I think. Is there a third family of plants as numerous, and, at the same time as varied in its seasons of flowering? I counted only eighteen plants in flower, including the Willow this Christmas, while in 1874 forty-five were in bloom. So much for the frost and snow in November.—F. J. Hope, *Wardie Lodge, Edinburgh.*

Curious Movement of Fir Leaves.—M. Chatin has lately called attention in the French Academy to some curious periodic movements in the leaves of Abies Nordmanniana, which are whitish on the lower and dark green on the upper surface. If the tree be observed early in the morning, or about sunset, the *ensemble* of the foliage seems uniformly whitish; whereas, in the course of the day, the green tint seems very general. This is found to result from an alteration in the position of the leaves, so that they present, now their upper, now their under surface to the observer, and a diurnal position can thus be distinguished from a nocturnal one. M. Chatin has been studying these movements, and promises some further details regarding them shortly.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

To Prevent the Bleeding of Trees (H.).—There is, we believe, nothing better than Stockholm tar: a little ochre or umber gives it more substance. Thomson's Styptic answers well.

Araucaria imbricata, Fruiting (Sondes).—This noble tree has borne cones and perfect seeds in various situations in the United Kingdom. Seedlings from English-grown fruits were raised many years ago by Mr. Barnes at Bicton.

Growth of Roots.—A singular instance of root-growth is reported from France. An Elm tree, standing over Fontainebleau sandstone, forced its rootlets down so that they perforated the rock, leaving in it a perfect impression of their form. It is supposed that the cement which holds the grains of the rock together was dissolved by carbonic acid given off by the roots of the tree. This last statement is, we should say, doubtful, and not necessary to an understanding of the fact. Similar instances are common enough.

PLATE VI.

CALOCHORTUS VENUSTUS.

Drawn by Mrs. DUFFIELD.

The beautiful plant which forms the subject of our illustration this week is from a drawing, by Mrs. Duffield, of a plant that flowered in Mr. G. F. Wilson's garden, at Weybridge. It has been most faithfully and delicately re-produced for us by Mr. Brand. Being thus enabled to fairly represent the beauty of one species, we publish also descriptions of the whole family as now known. These may serve to show what a full store of beauty is possessed by this almost neglected genus, and may also be useful for reference in the future.

History and Distribution of the Genus.

This lovely Liliaceous genus, of which we are now able to give descriptions of more than twenty distinct species, besides a number of varieties, was established by Pursh in his "Flora Boreali-Americanæ" (1814), for a single species, C. elegans, found at the Head Waters of the Kooskoosky, in California. This handsome species, as may be seen on reference to the description of it further on, has since been found by several different collectors, and by Douglas as far north as British Columbia. In 1815 the seventh volume of Humboldt, Bonpland, and Kunth's great work, the "Nova Genera," appeared, containing figures of two additional species, referred to the genus Fritillaria. These are Mexican species, C. purpureus and C. flavus, growing at an elevation of between 6000 and 7000 feet, near Patzcuro, Valladolid, &c. They are described in the first volume of the work quoted, where it is stated that they grow in dry sunny places, a fact worth remembering by the cultivator. The unfortunate David Douglas furnished the next link in the history of the genus; indeed, he discovered, on his different journeys in California and British Columbia, nearly half of the species known at the present time. The first batch sent home by him included C. macrocarpus and the yet more beautiful C. nitida. These species were probably received in 1825, as we find a paper relating to them by Douglas of that date, in the seventh volume of the "Transactions of the Horticultural Society," accompanied by coloured plates of both species. C. macrocarpus is there said to grow in undulating, dry, barren ground, around the Great Falls of the Columbia River, and on the summit of the low hills between them and the Grand Rapids, 200 miles from the ocean. They were successfully raised in the Society's Gardens, and are stated to be quite hardy, as no doubt they are, being both natives of the northern limits of the genus. The next batch sent by Douglas was still more important, for it included C. splendens paniculatus, pulchellus, and the exquisitely beautiful C. venustus, of which we give a portrait to-day. These were raised from seed in the Horticultural Gardens, between 1831 and 1833, and Mr. Bentham described them in the first volume of the new series of the Society's "Transactions." About the same period, or shortly afterwards, figures of them, and several other species, appeared in the "Botanical Register" and Sweet's "Flower Garden," references to which will be found in the descriptions of the several species below, translated from Mr. J. G. Baker's paper, "Revision of the Genera and Species of the Tulipæ," in the seventh volume of "The Journal of the Linnean Society." We have pleasure in adding that it is with Mr. Baker's full approval that we take this opportunity of placing this portion of his valuable paper before a more numerous class of readers. Not to weary our readers with too much detail on the history of the introduction of the species, we may at once say that those introduced by Douglas seem to have disappeared very quickly from our gardens; and it is only within the last few years that they have been re-introduced by M. Roezl and others, together with several additional new species and varieties. There is no doubt that they will enjoy a much longer term of favour this time, as there is a growing taste for plants of this class; and we believe, judging from the known variability in the colouring of some species, and especially for the great variety of colours exhibited by the different species, than when the skill of the hybridiser has been exercised upon them, the results will be as satisfactory as in the case of the Tulip. The only deviation from Mr. Baker's paper is that the variety citrinus of C. venustus has since been raised to the rank of a species from an examination of living specimens. Of the twenty-two species at present known, thirteen are, or have been, in cultivation. As it is the hardier species that are the most desirable for cultivation, British Columbia and Oregon should be visited for additional species. C. apiculatus and Lyalli, collected by Dr. Lyall at a considerable elevation in the former country, are not yet in cultivation; and doubtless other species would reward the explorer. The geographical area of the genus extends from about 15° to 50° North latitude, from Mexico, through New Mexico, California, Utah, and Oregon, to British Columbia. One species, C. elegans, is reported from Missouri and Oregon (Geyer), otherwise they appear to be confined to the western mountain ranges of North America. From their great range of latitude, it will be understood that the species are not all equally hardy, for, although the Mexican species are found at a considerable elevation, as indicated above, so are some of the more northerly ones; C. Lyalli, for instance, is found at an elevation of 5800 feet in the mountains of British Columbia.

Culture.

All the species of Calochortus are bulbous, and the bulbs of most of them are small as compared to those of Tulips, rarely, so far as we know, attaining an inch in thickness, and usually not more than half-an-inch. With the exception of C. Hartwegii, purpureus, and flavus, all of them have bulbs with a membranous coat; in those named the coat is fibrous. The stem is usually slender, and the nature of the whole plant seems to indicate that it loves a sunny, well-drained situation. All the information we have been able to collect respecting the native habitats of different species confirms this view, as do also the accounts of the conditions under which they flourished in the horticultural and other gardens. Mr. A. J. Perry, of Tottenham, who is raising them on a large scale, has kindly communicated his experience of their culture. It should be mentioned here, however, that they all flower in the summer and early autumn. Mr. Perry would recommend persons who possess a suitable situation—that is, rock-work, or a well-drained, warm border—to allow the bulbs to remain undisturbed in the ground, as they throw much finer flowers. Planted well up on rock-work, where they were dry in winter and sufficiently moist in summer to do without watering, they made vigorous growth, and flowered freely. The principal requirement is, doubtless, protection from wet. For ordinary beds and borders it is expedient to lift the bulbs and store them until they begin to push. For pot-culture, a fibrous loam, with a little leaf-mould, and plenty of silver sand, has been found to answer admirably. In short, although rather delicate, these attractive plants will succeed very well, if the precautions indicated be taken; and they will certainly amply repay for the little extra trouble they may exact.

Affinities of the Genus.

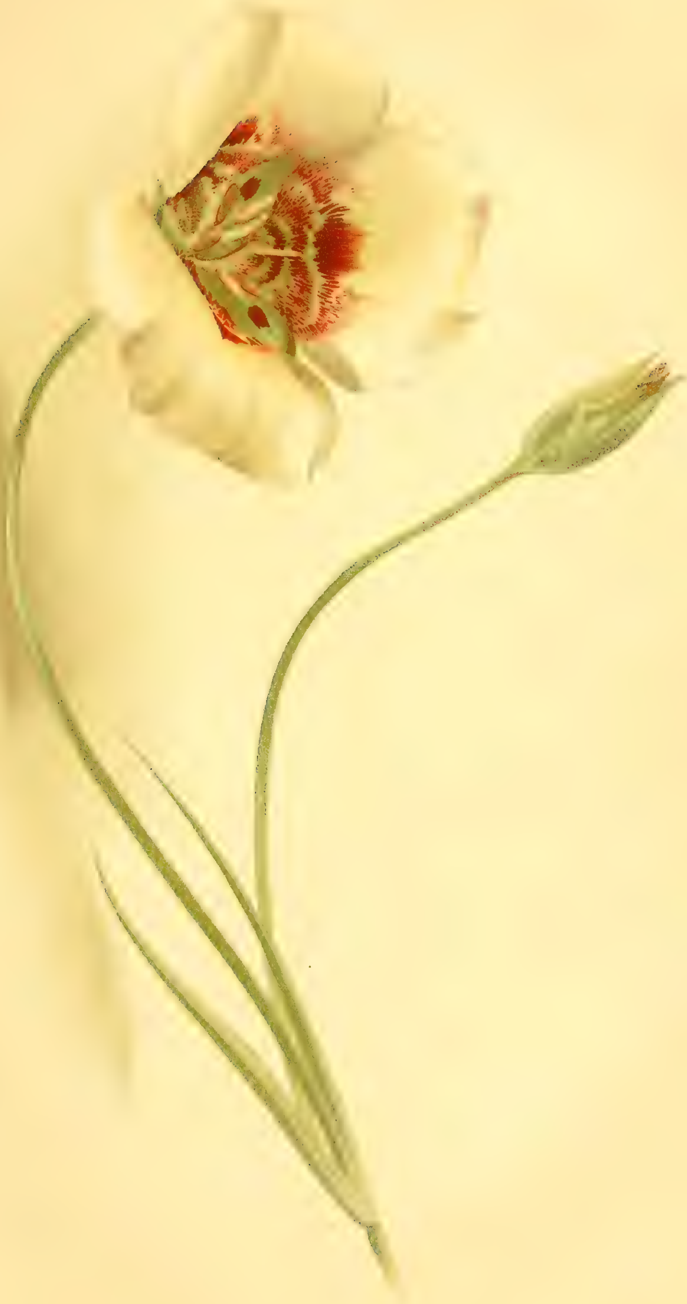
As here constituted, the genus Calochortus is one of the most distinct of the family to which it belongs, and it differs from the other five genera of its tribe, Lilium, Fritillaria, Tulipa, Erythronium, and Lloydia, in the outer perianth segments being different from the inner or like sepals, as in the Commelineæ, and in the capsule splitting between the partitions of the cells, not through the back of the cells. Many of the species have open, funnel-shaped, erect flowers, like C. venustus; but there are others with nearly globular, drooping flowers, in which the perianth segments are incurved at the tips. The latter approach some of the species of Fritillaria, and, as already mentioned, some of them were formerly referred to that genus. Sweet established the genus Cyclobothra for some of the species bearing this character, but other species, intermediate in character have been discovered. Taken as a whole, it is a very natural genus, easily distinguished by the characters given, coupled with the more or less bearded petals, on the face of each of which there is a more or less distinct glandular pit.

Key to the Species.

Sub-genus I. Macrodenus.—*Bulbs, with a membranous tunic; petals, with a deep pit; capsule, oblong.*

Perianth, when open, globose, nodding.

Petals, yellow ... ... 1. *pulchellus.*



Petals, white … … … … … 2. *albus.*
Perianth, when open, funnel-shaped, erect.
Petals, obovate-cuneate, rounded at the top.
Petals, yellow … … … … … 3. *Benthami.*
Petals, pale lilac-yellow.
Anthers, acute … … … … 4. *elegans.*
Anthers, remarkably acuminate … … 5. *apiculatus.*
Petals, ovate-oblong, pointed … … 6. *Lyalli.*

Sub-genus II. Platycarpus.—*Bulb, with a membranous tunic; petals, with a small pit; capsule, oblong.*

Petals, golden-yellow … … … … 7. *aureus.*
Petals, straw-coloured … … … … 8. *Nuttallii.*
Petals, lilac or purple.
Stem, always one-flowered … … … 9. *uniflorus.*
Stem, several flowered.
Sepals, distinctly spotted above … … 10. *flexuosus.*
Sepals, without spots.
Flowers, small; anthers small … … 11. *lilacinus.*
Flowers, large; anthers, large … … 12. *nitidus.*

Sub-genus III. Cyclobothra.—*Bulbs, with a fibrous tunic; petals, with a small pit; capsule, narrow.*

Outer perianth-segments similar to the inner;
scarcely sepaloid … … … … 13. *Hartwegii.*
Outer perianth-segments distinctly sepaloid.
Petals, purple … … … … … 14. *purpureus.*
Petals, yellow … … … … … 15. *flavus.*

Sub-genus IV. Mariposa (*Calochortus of Kunth*).—*Bulbs, with a membranous tunic; petals, with a small pit; capsule, narrow.*

Petals, orange yellow … … … … 16. *luteus.*
Petals, lemon-yellow … … … … 17. *citrinus.*
Petals, deep lilac.
Petals, distinctly cuspidate … … … 18. *macrocarpus.*
Petals, not all or very slightly cuspidate … 19. *splendens.*
Petals, white, pale lilac or straw-coloured.
Petals, scarcely bearded … … … 20. *venustus.*
Petals, without any central spot, and densely
bearded… … … … … … 21. *Gunnisoni.*
Petals, white, with a purplish bearded spot … 22. *Leichtlinii.*

Descriptions of the Sub-genera and Species.

Sub-genus I.—Macrodenus, Baker (Calochortus, Pursh, not of Kunth; Cyclobothra, Bentham and Lindley in part, not of Sweet).—Bulb with a membranous tunic; leaves without bulblets in their axils; sepals without spots; petals with a deep pit; capsule oblong with deep acute angles; fruiting pedicels bent downwards.

1. C. pulchellus (Cyclobothra pulchella, Trans. Hort. Soc., new series, vol. 1., t. 14, fig. 1; Bot. Reg., t. 1662).—Bulb, ovoid, with a membranous tunic, ½ to ¾ in. thick; stem, 1 to 1½ ft. high, with six to twelve flower-heads, deeply forked, branches spreading; leaves, one or two below the forks, moderately firm, 6 to 12 in. long, and ½ to 1 in. broad near the base; bracts, leafy, linear, acuminate, 1 to 4 in. long; flowers, nodding, deep yellow; sepals, oblong-lanceolate, acute, ½ to ¾ in. long, not spotted; petals, broadly oblong, 1 to 1¼ in. long, somewhat obtuse, with a deep glandular pit, bearded with yellow hairs on the margin and the lower half of the face; anthers, oblong, obtuse, 2 lines long, nearly as long as the filaments; capsule, oblong, 1 to 1¼ in. long, deeply angular. California: discovered by Douglas, and since found by Lobb and others. Raised in the Horticultural Society's garden from seeds sent home by Douglas between 1831 and 1833.

2. C. albus (Cyclobothra alba, Benth., Trans. Hort. Soc., new series, vol. 1, t. 14, fig. 3, and Bot. Reg., t. 1661).—Bulb, ovoid, ½ to ¾ in. thick, with a membranous tunic; stem, 1 to 2½ ft. high, with three to twelve heads of flowers deeply forked, with spreading branches; leaves, one or two below each fork, flat, linear, moderately firm, 6 to 12 in. long by ½ to ¾ in. broad; bracts, leafy, linear, acuminate, 2 to 6 in. long; flowers, globose, white, nodding; sepals, oblong-lanceolate, acute, without spots, ¾ to 1 in. long; petals, obovate-oblong, obtuse, 1¼ to 1½ in. long, bearded with white hairs on the margin, and sparsely on the lower half of the face, and furnished with a large glandular pit; anthers, narrow, oblong, sub-acute, about one-third as long as the filaments; capsule, broadly oblong, 1 to 1¼ in. long, membranous, with deep, sharp angles. California: discovered by Douglas, and since found by Bigelow and other collectors. It was raised and flowered in the Horticultural Society's gardens from seeds sent home by Douglas between 1831 and 1833.

C. albus var paniculatus, described by Lindley in the Bot. Reg., under plate 1662, as Cyclobothra paniculata, is dwarfer than the type, with narrower leaves and smaller flowers. It is also a native of California, and was first discovered by Douglas.

3. C. Benthami (C. nitidus of Wood, not of Douglas, Cyclobothra elegans var. lutea, Bentham, Plant. Hartw., C. monophylla).—Bulb, ovoid, 6 to 8 lines thick, tunic membranous; stem, 3 to 6 in. high, with 3 to 6 heads of flowers; leaves, one or two, the lower larger exceeding the corymb, linear, 6 to 9 in. long, 3 to 5 lines broad, acuminate; bracts, linear, leafy, 1 to 3 in. long; flowers, erect, funnel-shaped when expanded; sepals, oblong-lanceolate, acute, without spots, yellow and green, 6 to 9 lines long; petals, clear yellow, of the same length as the sepals, somewhat obtuse, covered with a yellow beard all over the face and margin; anthers, lanceolate, acute, 1½ lines long, a little shorter than the yellow filaments; fruiting pedicels remarkably curved; capsule, oblong, obtuse, 6 to 9 lines long, with deep acute angles. California: discovered by Hartweg, and not yet, so far as we know, in cultivation.

The variety cornutus of Wood has solitary flowers, and long acuminate sepals exceeding the petals.

4. C. elegans (Bot. Mag., t. 5976; Cyclobothra elegans, Bot. Reg., under plate 1661; C. cœrulea, Kellogg).—Bulb, narrow, ovoid, 5 to 6 lines thick, tunic membranous; stem, slender, 3 to 6 in. high, with three to six heads of flowers, arranged in an umbellate manner; leaf, solitary, 6 to 9 in. long, by 3 or 4 lines broad; bracts, leafy, linear, or lanceolate, 1 to 3 in. long; flowers, erect, and broadly funnel-shaped when expanded; sepals, green, lanceolate, acute, 6 to 8 lines long; petals, obovate-cuneate, 9 to 12 lines long, obtuse, or furnished with a small cusp, white or pale lilac, with a deep glandular pit, bearded with pale hairs on the margin and face, especially around the glandular pit; anthers, acute, 3 to 3 lines long, about half the length of the filaments; fruiting pedicels, remarkably deflexed; capsule, oblong, 9 to 12 lines long, with three prominent sharp angles. First discovered by Hartweg in California, and subsequently in Missouri and Oregon by Geyer and Spalding, and in British Columbia by Douglas and Hinds.

Mr. Baker considers the following form varieties of C. elegans:—C. Tolmiei, collected by Tolmie on the banks of the Wallamet river, is a stouter variety with larger flowers than the type, and the face of the petals is bearded nearly all over; C. Maweanus (Bot. Mag., t. 5976), discovered by Lobb in California, and since raised in Mr. Max Leichtlin's garden at Carlsruhe, is a dwarf hairy variety, in which the whole face of the petals is densely bearded; C. Lobbii, Oregon, Lobb, is similar to C. Tolmiei, but having remarkably apiculate anthers; and, finally, C. subclavatus is a smaller-flowered form, bearded only at the top of the glandular pit. The typical form was introduced in 1826.

The plant recently figured in the "Gartenflora," as a new species, under the name of C. glaucus, should be referred here. Indeed it is the ordinary form of C. elegans.

5. C. apiculatus.—Bulb, ovoid, with a membranous tunic; stem 1 to 1½ ft. high; one to nine headed; leaf, solitary, flat, linear, 6 to 12 in. long by 3 to 9 lines broad; bracts, linear, acuminate, 1 to 3 in. long; flower, broadly funnel-shaped, and erect when open; sepals, lanceolate, white and green, acute, 8 to 9 lines long; petals, straw-coloured, broadly obovate, obtuse, 1 in. long, with a distinct glandular pit; pit, densely bearded; whilst the remainder of the face and margin of the petals are furnished with only a few scattered hairs; anthers, straw-coloured, 4 lines long, very acuminate, equalling the filaments; fruiting pedicels, remarkably drooping; capsule, 12 to 15 lines long, narrow, oblong. A native of the mountains of British Columbia: discovered by Dr. Lyall. Perhaps only a fine variety of C. elegans. Not yet in cultivation.

6. Lyalli.—Bulb, with a membranous tunic; stem, 6 in. high, with two or three flower-heads; leaves, solitary, linear, flat, 5 to 6 in. long by 3 to 4 lines broad; bracts, linear, acuminate, 6 to 9 lines long; flowers, erect and broadly funnel-shaped when expanded; sepals, green and white, lanceolate, acuminate, 6 to 9 lines long; petals, white, slightly exceeding the sepals, ovate-acuminate, with a deep spot-like glandular pit, and bearded over the entire face and margin; anthers, yellow, somewhat acute, 2 lines long; filaments very little longer; mature capsule not seen. Discovered on the summits of mountains at an altitude of 5800 ft. between the rivers Columbia and Yakima, in British Columbia, by Dr. Lyall. Not in cultivation.

Sub-genus II.—Platycarpus (Baker).—Bulbs, with a membranous tunic; leaves without bulblets in their axils; sepals sometimes faintly spotted on the face; petals furnished with a shallow glandular pit; capsule, oblong, prominently angled: fruiting pedicels erect.

7. C. aureus.—Stem, 4 to 6 in. high, with one or two flower-heads. The solitary leaf is radical, linear, and 3 to 4 in. long; bracts, linear, 2 in. long; sepals, oblong or ovate-lanceolate, yellow and green, with purple spots near the base; petals, obovate-cuneate, 15 lines long, rich deep yellow, bearded near the base of the glandular pit, and furnished with purple spots near the base of the face; unripe capsule, narrow-oblong. Found growing on sand-rock hills in Southern Utah, by Mrs. E. P. Thomson. Not seen by Mr. Baker, and not yet in our gardens.

8. **C. Nuttallii** (C. luteus, Nuttall, not of Douglas).—Bulb, ovoid, with a membranous tunic; stem, 9 to 18 in. high, with one to four flower-heads, arranged in an umbellate manner; leaves, linear, deeply channelled, the lowest 6 to 9 in. long, by 3 to 4 lines broad; bracts, linear, leafy, acuminate, folded, 1 to 1½ in. long; flowers, broadly funnel-shaped, erect; sepals, lanceolate, 6 to 12 lines long, acute, face faintly coloured, and obscurely spotted with purple; petals, 12 to 18 lines long, broadly obovate, cuneate, obtuse, straw-coloured, densely bearded above the base of the glandular pit, and furnished with a smooth spot about mid-way up the face; anthers, bright yellow, obtuse, 3 to 4 lines long, slightly shorter than the filaments; capsule, oblong, 6 to 9 lines long, with deep angles. This species inhabits the Rocky Mountains, and has been collected in Idaho, Montana, Utah, and North California. Nuttall was, we believe, the discoverer. C. eurycarpus, of Watson, is probably a more Alpine form of the same species; and C. parviflorus, of Nuttall, is a slender variety, with narrow, obovate, subacute petals, 6 in. long, with the glandular pit above the middle. Not in cultivation.

9. **C. uniflorus** (not of the Bot. Mag., t. 5804).—Bulb, 3 to 4 lines thick, with a membranous tunic; stem, slender, 3 to 6 in. high; never bearing more than one flower-head; leaves, three or four, linear, the lower one equalling the scape, 2 to 3 lines broad; flower, erect, borne on a naked peduncle, 2 to 5 in. long; sepals, lanceolate, acute, green, destitute of spots, 6 to 7 lines long; petals, 9 to 12 lines long, broadly obovate, cuneate, pale lilac, with an obscure glandular pit, purple above the base, and furnished with long hairs above the glandular pit; anthers, obtuse, 1½ lines long, about a third as long as the filaments; ovary, oblong, capsule not seen. California: collected by Douglas and others.

10. **C. flexuosus.**—Stem, flexuose, branching; bracts, linear-lanceolate, 6 to 15 lines long; sepals, oblong-lanceolate, greenish; the face furnished with deep orange-purple spots; petals, broadly obovate, cuneate, 12 to 15 lines long, purple; claw, deep purple, furnished with an obscure orange-purple glandular pit above the claw, and glandular hairs on the margin; capsule, narrow-oblong. Utah and Arizona; collected by Mrs. E. P. Thomson. Not seen by Mr. Baker, and not in cultivation in this country.

11. **C. lilacinus** (C. umbellatus, Kellogg; C. uniflorus, Bot. Mag. t. 5804, not of Hooker & Arnott, our number 9).—Bulb, ovoid, with a membranous tunic; stem, 4 to 6 in. high, with three to nine umbellately-arranged flower-heads; pedicels, lengthened; the single sub-radical linear leaf considerably overtops the umbel, being 4 to 6 in. long by 2 to 5 lines broad; bracts, acuminate; leafy, 1½ to 3 in. long; flowers, erect, broadly funnel-shaped; sepals, lanceolate, 6 to 7 lines long, green, tinged with lilac, face without spots; petals, lilac, obovate-cuneate, a little longer than the sepals, furnished with an obscure glandular pit above the claw, slightly bearded around the pit, margin not bearded; anthers obtuse, 1½ lines long, one-third of the length of the filament; pollen, blue; capsule, small, oblong, erect. California: Bigelow, and others. Lobb collected a form with larger flowers, the petals reaching an inch in length and breadth, and the pedicels 4 to 5 in. This variety is not in our gardens.

12. **C. nitidus**, Douglas, not of Wood (Cyclobothra nitida, Kunth).—Bulb, not seen; stem, erect, upright, 1½ to 2 ft. high, umbellately, three to four headed; leaves, two or three, ascending, narrow, linear, convolute, lower 6 to 9 in. long by 3 lines broad at the base; bracts, leafy, linear, acuminate; flowers, erect and broadly funnel-shaped when open; sepals, linear, acuminate, 15 to 18 lines long; petals, obovate, spathulate, obtuse, pale lilac, furnished with a distinct densely-bearded glandular pit, and sparsely furnished with long hairs on the face and margin; anthers, yellow, obtuse, 4 lines long, nearly equal in length to the filaments; fruiting pedicels, erect; capsule, oblong, 1 in. long, deeply angled. British Columbia, Douglas; Oregon, Spalding.

Sub-genus III.—Cyclobothra (Sweet).—Bulbs, with a fibrous tunic; leaves with bulblets in their axils; face of sepals spotted, and sometimes shaggy; petals, with an indistinct glandular pit; capsule, cylindrical triquetrous. All natives of Mexico.

13. **C. Hartwegii** (Cyclobothra Hartwegii).—Bulb, not seen; stem, 18 in. high, flexuose; leaves, five or six, ascending, narrow, linear, glabrous, firm, channelled, 1½ to 2 lines broad, occasionally bearing bulbs in their axils, the lowest 1 ft. long, the upper ones paired, or in threes, 3 to 4 in. long; flowers, one or two; sepals and petals somewhat similar, about 2 in. long, yellow, suffused with purple, oblong, lanceolate; sepals, a little shorter and more acute than the petals, and, like the latter, furnished with a few hairs above the basal spot; petals, 6 lines broad, with an inconspicuous centre glandular pit; filaments, 6 to 7 lines long; anthers, obtuse, 3 to 4 lines long; ovary, 1 in. long, triquetrous, with small spreading, recurved stigmas; capsule, linear, triquetrous, 3 lines thick. Mexico, in mountain pastures at Aguas Calientes, discovered by Hartweg. This species differs from all others of the genus, and approaches Fritillaria in having the outer perianth segments petaloid.

14. **C. purpureus** (Fritillaria purpurea, H.B.K., Cyclobothra purpurea, Sweet's Fl. Gard., series ii., t. 20, C. propinqua, Calochortus Bonplandianus).—Bulb, ovoid, with a fibrous tunic; stem, 1½ to 2 ft. high, with one or two flower-heads, sometimes deeply forked; leaves, five or six, firm, ascending, furnished with large bulblets in the axils, lower ones linear, 5 to 6 in. long, upper ones lanceolate, 1 to 2 in. long, by 3 to 4 lines broad; flowers, at first nodding, horizontal at the time of opening, purple; sepals, nearly as long as the petals, oblong-lanceolate, green at the back, glabrous and distinctly spotted below the middle on the face; petals, oblong-lanceolate, 9 to 12 lines long by 3 lines broad, with an obscure glandular pit on the claw, clothed with a purple-yellow beard on the face throughout the middle; filaments, 3 lines long, anthers, obtuse; ovary, cylindrical, triquetrous, 4 to 5 lines long; stigmas spreading and recurved. Mexico: Graham and others. Cyclobothra grandiflora is a large-flowered variety in which the sepals especially are longer; Calochortus fuscus, of Schultz, is probably a form of this species, with the face of the sepals slightly bearded. This species was in cultivation in this country in 1827. The plant figured in Sweet's Fl. Gard. was from the nursery of Mr. Tate in Sloane Street, where several other species were to be seen, as Mr. Sweet informs us.

15. **C. flavus** (Maunders' Bot., iv., t. 170, Cyclobothra flava, Fritillaria barbata, Cyclobothra barbata, Sweet's Fl. Gard., t. 273, C. lutea, Bot. Reg., t. 1663, Calochortus pallidus).—Bulb, ovoid, with a hard reticulated fibrous tunic; stem, 1 to 2 ft. high, with one to six flower-heads, slender, fragile, deeply forked, branches ascending; leaves, below the forks from two to three, linear, very acuminate, 9 to 12 in. long; bracts, with small bulblets in their axils—lower ones, linear, acuminate; upper ones, small, lanceolate, somewhat scarious; flowers, at first nodding, yellow; sepals, 8 to 10 in. long, ovate, acute, green on the back, yellow on the face, indistinctly spotted, and furnished with a few scattered bristles; petals, a trifle longer than the sepals, obovate, obtuse, or cuspidate, 4 to 6 lines broad, with an obscure glandular pit on the claw; above the claw and throughout the middle furnished with short purple bristles; filaments, 4 lines long; anthers, yellow, obtuse, half as long; ovary, cylindrical, triquetrous, 4½ to 5 lines long. Mexico: Hartweg and others. Introduced in 1827, and flowered by Mr. Tate, quoted under the last species.

Sub-genus IV.—Mariposa (Wood).—Bulbs, with a membranous tunic; leaves, convolute, without bulblets in their axils; sepals, sometimes spotted on the face; petals, with a slight glandular pit at the base; fruiting pedicels, erect; capsule, linear, obtusely three-angled. All the species of this section have very showy flowers, and are very closely allied.

16. **C. luteus** (Bot. Reg., t. 1567; Paxton's Mag., t. 221).—Bulb, ovoid, with a membranous tunic, 6 to 9 lines thick; stem, 1 to 1½ ft. high, flexuose, with one to four flower-heads; leaves, three or four, narrow, linear, glaucous, channelled, 6 to 12 in. long; bracts, leafy, linear, acuminate, 1 to 2 in. long; sepal, lanceolate, acute, or acuminate, yellow-green, 9 to 15 lines long; face with yellow spots and black dots; petals, deep orange, obovate, cuneate, truncate, 12 to 18 lines long and broad, furnished with an indistinct, densely-bearded, glandular pit above the claw, nearly naked upwards, often with a zone of rich brown dots, and a central blotch; anthers, obtuse, 3 to 4½ lines long; filaments, orange, about the same length; capsule, 12 to 21 lines long by 3 to 4 lines broad, obtusely angled. California: discovered by Douglas, who sent seeds to the Horticultural Society's garden in 1831. C. Weedii, of Wood, is a variety of the preceding, with deep orange petals, having no central blotch, and densely bearded all over.

17. **C. citrinus** (Bot. Mag., t. 6200).—Bulb, ovoid, under 1 in. thick, with a membranous tunic; stem, 1½ ft. high, firm, terete, glaucous; three to four flowered; forked low down; leaves, tolerably firm in texture, linear, glaucous, those from the bulb 6 in. long, those that sustain the branches similar, but smaller; flowers, permanently erect; sepals, 1½ in. long, lanceolate, acuminate, greenish, and naked on the back, yellow on the face, with a small hairy brown spot near the base; petals, round-cuneate 2 in. broad and deep, rounded, with a cusp on the outer border

bright lemon-yellow, the claw naked, above the claw is a round conical hairy yellow spot, with a purple border, the rest of the face is without any zone or blotch, but covered with spreading purple gland-tipped bristly hairs; stamens, half as long as the petals; filaments, erect, lanceolate; anthers, cylindrical, pale purplish brown, apiculate, diverging, 6 to 8 lines long; pollen, pale brown; ovary, clavate, under 1 in. long; stigmas, short, falcate. British Columbia, Rocky Mountains, and California. This is a new species, quite recently figured in the Bot. Mag. from specimens grown by Mr. G. F. Wilson, Weybridge. It is included in Mr. Baker's "Revision of the Tulipæ," as a variety of C. venustus.

18. **C. macrocarpus** (Trans. Hort. Soc., Vol. VII., t. 8; Bot. Reg., t. 1152).—Bulb, ovoid, with a membranous tunic, 9 to 15 lines thick; stem, firm in texture, flexuose, 1½ to 2 ft. high, with two to six flower heads; leaves, three or four, narrow, linear, convolute, lower ones 6 to 9 in. long; bracts, firm in texture, convolute, 1 to 4 in. long; sepals, lanceolate, green, spotless, 15 to 24 lines long; broadly scarious at the margin; petals, about the same length as the sepals, deep lilac, obovate, distinctly cuspidate, claw furnished with a scanty beard around the obscure glandular pit; anthers, somewhat obtuse, 5 to 6 lines long, equalling the lilac filaments; capsule, linear, obtusely angled, 2 to 3 in. long, 3 to 4 lines thick. British Columbia. Sent home by Douglas in 1826, and flowered in the Horticultural Gardens in 1827. The figure in the Bot. Reg. represents the flowers about 5 in. across, the sepals considerably exceeding the petals. Geyer collected a variety with redder-coloured flowers.

19. **C. splendens** (Bot. Reg., t. 1676).—Bulb, ovoid, with a membranous tunic; stem, flexuose, 1½ to 2 ft. high, with three to five flower-heads; leaves, three or four, narrow, linear, convolute, 6 to 9 in. long; bracts, linear, acuminate, 2 to 3 in. long; sepals, lanceolate, green, spotless, 12 to 18 lines long; petals, deep lilac, 18 to 24 lines long, and broad obovate-cuneate, rounded on the outer margin, or slightly cuspidate, of the same colour in the middle, or occasionally with reddish spots, the third lower one furnished with a purple beard around the glandular pit; anthers, somewhat acute, 5 to 6 lines long; filaments of about the same length; capsule, linear, triquetrous, 1½ to 2 in. long, 3 to 4 lines thick. California: discovered and introduced by Douglas.

20. **C. venustus** (Trans. Hort. Soc., new series, i., t. 15, fig. 3; Bot. Reg., t. 1669).—Bulb, ovoid, with a membranous tunic, 6 to 9 lines thick; stem, flexuose, 1 to 2 ft. high, with two to six flower-heads; leaves, three or four, narrow, linear, convolute; bracts, linear, leafy, 2 to 4 in. long; sepals, lanceolate, 12 to 18 lines long, face sometimes distinctly spotted; petals, broadly obovate-cuneate, rounded on the outer margin, white or pale lilac, of the same colour in the centre, or spotted with orange-purple; claw, with an obscure, bearded, glandular pit, and a few hairs and red-brown spots above the pit; anthers, obtuse, 3 lines long, nearly as long as the filaments; capsule, linear, triquetrous, 15 to 18 lines long, 3 to 4 lines thick, slightly angled. California: discovered and introduced by Douglas.

21. **C. Gunnisoni.**—Bulb, ovoid, with a membranous tunic; stem, firm in texture, 1 to 1½ ft. high, with one to four flower-heads; leaves, three or four, narrow, linear, channelled, lower ones 6 to 9 in. long; bracts, linear, leafy; sepals, lanceolate, acuminate, 12 to 15 lines long, green, face scarcely spotted; petals, obovate-cuneate, 15 to 18 lines long and broad; rounded on the outer margin or slightly cuspidate, pale lilac or white, without spots in the centre, the third lower one with a deeper lilac zone and densely bearded, and furnished with a bearded glandular pit; anthers, acute, 3 to 4 lines long, as are also the filaments; ovary, cylindrical, triquetrous. Rocky Mountains (Colorado and Utah): Geyer, Gunnison, and others.

22. **C. Leichtlinii** (Bot. Mag., t. 5862).—Bulb, small, ovoid, tunic, membranous; stem, 5 to 6 in. high, slender, flexuose, with one to three flower-heads; leaves, three or four, narrow, linear, convolute, 1½ lines broad; bracts, leafy, 1 to 2 in. long; sepals, lanceolate, green, 12 to 15 lines long; petals, obovate-cuneate, 18 to 21 lines long and broad, slightly cuspidate at the apex, white; claw, with a purple blotch above, and bearded around the obscure glandular pit; anthers, yellow, obtuse, 3 lines long, ovary, cylindrical, triquetrous. On the Sierra Nevada, California: detected and sent home by Roezl.

There is another species in cultivation, under the name of C. Roezlii, which has not yet been fully described, and the flowers of which we have not seen. According to M. Roezl, who introduced it, it grows about 18 in. high, bearing four to eight flowers of a lovely Prussian blue, with a small purple blotch at the base of each petal. The flowers are even larger than those of C. venustus, nearly circular, and lasting a considerable time.

List of Species described above with references to their numbers.

albus	2	flavus	15	luteus	16	purpureus	14
apiculatus	5	flexuosus	10	Lyalli	6	splendens	19
aureus	7	Gunnisoni	21	macrocarpus	18	uniflorus	9
Benthami	3	Hartwegii	13	nitidus.	12	venustus	20
citrinus	17	Leichtlinii	22	Nuttallii	8		
elegans	4	lilacinus	11	pulchellus	1		

Synonyms and Varieties.

For convenience, we append a list of the synonyms and names of the varieties quoted; but where the specific names remain unchanged, they are not repeated under Cyclobothra.

CALOCHORTUS.	No.	CYCLOBOTHRA.	No.
Bonplandianus	14	Weedii	16
eurycarpus	8	barbata	15
fuscus	14	cœrulea	4
glaucus	4	elegans var. lutea	3
luteus (Nuttall)	8	grandiflora	14
Lobbi	4	lutea	15
Maweanus	4	monophylla	3
nitidus (Wood)	3	paniculata	2
pallidus	15	propinqua	14
parviflorus	8		
subclavatus	4	FRITILLARIA.	
Tolmiei	4	barbata	15
umbellatus	11	purpurea	14
uniflorus (Bot. Mag.)	11		

W. B. HEMSLEY.

GROWTH WITHOUT LIGHT.

THE presence of strong light in the early stages of growth seems to have a retarding influence upon some plants. I have known instances where the Lily of the Valley when forced in pots—especially imported clumps—positively refused to grow under strong light in a warm house, yet, when moved to a dark Mushroom house, or covered with Moss or litter to exclude light, the buds started directly. Dielytra spectabilis, Lilacs, and many other deciduous plants and shrubs will break more readily in the dark than when exposed to strong light. I once saw an experiment tried in a house containing young pot Vines; they were exceedingly sluggish in starting and the produce was wanted early, and after twisting the canes with a view of liberating the sap, till the tissues fairly cracked without producing any effect, the house was covered with mats for a week night and day, whilst at the same time the requisite temperature with plenty of moisture was kept up; the upshot was they broke strongly and regularly and carried a good crop. Of course where anything is covered up in this way to expedite growth, when the buds are pushing and the sap fairly in circulation, the covering must be removed and light admitted, choosing a dull day if possible for uncovering; as, although growth or elongation in all plants under either natural or artificial conditions takes place mostly in the night, or at least during that period of the twenty-four hours when the sun is absent, still without its consolidating and maturing influence such growth or elongation would be useless for producing fruit, or in most cases flowers either; but as regards the latter there may be a few exceptions, one illustration of which may be furnished by the plan now commonly adopted of forcing Lilacs in the dark for the purpose of obtaining pure white flowers. Anyone accustomed to note the changes that take place in spring must often have been struck by the effect produced by two or three dull warm days, when accompanied, as they often are at that period, by comparatively warm nights. There is something almost magical in the rapid unfolding of the leaves, which is much more noticeable than in bright sunny weather, as such days are often followed by cold frosty nights, which chill the sap and stop growth. In securing the rapid germination of seeds when sown in pots or pans under glass, it is a common practice to place a layer of Moss over the surface of the soil after the seeds are sown, and this has been found materially to hasten their growth. In the same way covering Radishes and other early crops in the open air with straw or mats to exclude light and secure an even state of moisture and temperature has an important influence in the early germination of the seeds. Some may say that the even state of moisture has as much to do with it as the exclusion of light, but whilst that even state of moisture cannot easily be secured without excluding light, I believe, judging from my own observations and experiments, that its exclusion, as far as germination is concerned, is most important. EDWARD HOBDAY.

Forming Flower-beds in Snow.—A rope is useful for marking out irregular beds, or lines of walk; but I saw, the other day, some beds marked out on Grass in a few minutes on the thin snow. The outline was well shown up by the dark line of Grass, and pegs were at once set, in case of thaw.—F. J. HOPE, *Wardie Lodge.*

THE FLOWER GARDEN.

FAILURE OF COLCHICUMS, &c., THROUGH DEEP-ROOTING.

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

Colchicums, or Meadow Saffrons, as they are generally called, are very interesting plants, particularly during their flowering season, which ranges, according to circumstances, through the greater part of the months of August and September, as will be seen by the annexed account of their blooming in the rock garden during the past autumn. Some of the same species and varieties, although flowering on other dates (sooner or later) in various parts of the garden are not so punctual. This seeming irregularity, however, depends entirely on soil and situation. Those growing in the rock-garden compartment are all cultivated under the same circumstances as to soil and exposure. I therefore give the order and dates on which they came into bloom :

Aug. 10.—Colchicum autumnale (single pink)
„ 12.—Colchicum autumnale (single white)
„ 18.—Colchicum crociflorum
„ 20.— „ pallidum
„ 23.— „ speciosum
Aug. 26.—Colchicum variegatum
Sept. 11.— „ autumnale (double pink)
„ 14.—Colchicum autumnale (double white)
„ 18.—Colchicum rubrum

Most of the species are of easy cultivation. Care, however, must be taken not to allow the roots to remain too long in one place, as they are apt to get into dense groups, a condition in which some varieties will not flower, while others produce numerous weakly blossoms from one root, such as the single-flowered pink and white sorts. The double pink variety, however, seems to flower as freely when thus circumstanced, as it does when growing singly. The two species to which I wish more particularly at present to direct attention are C. speciosum and C. rubrum. The former is one of the most beautiful of the large pink-coloured kinds; but, like the others, it must be occasionally lifted and re-planted, in order to secure good flowering bulbs. On lifting some plants of it lately, after having been two years in the ground, the flowers not being equal in size to those produced the year after planting, the bulbs were found to have a number of young bulblets firmly clustered round the old ones, all of which were removed and planted separately. The Colchicum rubrum is another very interesting dwarf dark purplish species, but one which seems to flower very sparingly. In two stone compartments of the rock garden four bulbs of this variety were planted four years ago about 4 or 5 in. under the surface; at first the original bulbs flowered well, but were observed to be dwindling off every season, until last autumn only one flower was produced in each compartment, the supposition being that the roots had all decayed. These compartments were recently turned out, in order to examine the state of the roots, when instead of being 4 or 5 in. under the surface, they were mostly found to be from 8 to 10 in., and in a compact mass, chiefly small tubers thickly coating the bottom of each compartment; but too deep to flower properly, or even to produce leaves. All were lifted, separated, and again planted near the surface. It seems to be characteristic of this variety to work down into the soil, when neither flowers nor leaves can be developed. In some of the London nurseries visited last autumn I observed large portions of beds originally planted with this variety apparently empty, a few flowers only being visible. On these beds the roots had doubtless worked down too deep for flowering. Of these recently lifted here, I had some planted in stone compartments having artificial bottoms formed of porous brick placed about 4 or 5 in. below the surface, in order to keep the roots from working down, and thus give them a better chance of becoming ripened for flowering, which they could not possibly be at the depth at which we found them.

Crocus nudiflorus, sativus, serotinus, and speciosus are all autumnal-flowering varieties, the bulbs of which have a tendency to get down too deeply into the soil to flower well for any length of time. They therefore require occasional lifting and dividing, otherwise more leaves are produced than flowers. Among the kinds just named C. speciosus is one of the most interesting. It does not, however, produce so many leaf-shoots when not lifted as the other autumn-flowering varieties mentioned; still, when left too long in the ground without lifting, the flowers become small and less highly coloured than they otherwise would be, and never have the same appearance as those lifted and replanted every two years. It is not an uncommon practice to lift the roots after the flowering season is over, and keep them dry for a time before re-planting them. This practice may answer very well in England where the roots are more thoroughly ripened before lifting than in Scotland, but I never found any bad effects produced or qualities impaired in the garden here by keeping the roots constantly in the ground, lifting and re-planting them only when found necessary. It does happen that when lifted and kept dry for a time (which certainly is not their natural condition) the roots are apt to become weak, and the flowers diminish in size. The Iris reticulata is another very interesting bulbous plant, but, if kept too long in the ground, particularly in one situation, the roots are apt to become leafy, and few flowers are the result. This Iris flowers very freely here both in the rock garden and in beds. It is generally lifted and re-planted every two or three years. When lifting is necessary it is generally done as soon as the flowering is over, and while the old leaves and flower-spikes are attached, keeping the larger or flowering roots in rows several inches apart each way, and the smaller ones also in rows close together. A system frequently practised is to lift the roots, and keep them dry for some months before re-planting them. By this treatment I never found them to produce such fine flowering masses as they do when the roots are kept constantly in the ground. By this management the small roots soon work into flowering plants, while, by the lifting and drying system, many of the smaller roots dry up altogether; and if care be not taken to plant the large or flowering roots in proper time they too frequently come up weak, and in some cases rot off altogether, which never happens when constantly in the ground.

SPRING-SOWN PRIMROSES.

My first flowers of the Primrose were obtained from a batch of seedlings raised from seed sown early last spring. These, when large enough, were pricked out into a shallow box, and placed in a shady situation, where they were allowed to remain throughout the summer, of course being liberally supplied with water. These plants not only maintained their foliage, but produced large robust crowns, whilst all those growing out in the beds lost every leaf. The blooming season of the Primrose, thus well started with the first days of the year, will last over three months, probably longer, as some varieties bloom later than others, and nearly all this year will be later than usual. I think this collection comprises about fifty plants, and, judging by what have already opened, almost fifty diverse hues of colour may fairly be anticipated. This fact forcibly shows the numerous varieties of colouring that the Primrose is assuming, and how lovely might our woods and glades be made if carpeted with myriads of these beautiful spring flowers. Of course, my Primroses are under glass; but, although protection is by no means necessary to their cultivation, there can be no question that thus early in the year the protection afforded by a frame is amply demonstrated by the superb condition of the flowers. In the case of common sorts, which are in abundance, protection is of little moment; but when scarce kinds or a batch of choice seedlings are in question, it would be the height of folly to begrudge a little temporary shelter, especially as the rich colours and beauties of the flowers are rendered so much more perfect and clear. Where the cultivation of the Primrose is a speciality, the devotion to its winter culture in a small frame covered with glass is amply repaid by the extra precocity of the plants, and the singular charms presented by the flowers in all weathers. In houses the plants may contract green fly and a rank growth of leafage, but in a cold frame, and planted near the glass, these defects are not apparent, and, as soon as the bloom is over, the plants may be removed to some shady border where they may find themselves little affected by the summer heat. From seed sown as soon as ripe last summer I have some strong plants that will flower late in the spring, but the majority are too small, although the seed was sown under glass, and it would be better to delay sowing till another year. Seed sown as soon as ripened usually germinates with considerable irregularity, some of it lying in the soil for months before making growth. It would be, therefore, impossible fairly to decide upon its qualities until after another year's cultivation. Spring-sown seed, on the other hand, usually germinates very evenly, and all the plants so raised will flower the following spring, so that the quality of the bloom is soon made manifest. In addition to a large quantity of selected named kinds now under glass, I intend also to bloom a good batch of selected seedlings of last year to further test their quality, so that, with the two seedling batches already mentioned, I have fair hopes of successfully raising many new and beautiful varieties. Our greatest want now is a good bright yellow; whites we have almost perfect, and sulphur hues the same, but a good golden hue is still wanting. Queen of Yellows, so far, is the best; but it does not exactly realise the idea of a yellow Primrose, either in shape or hue. Deep rich colours are fairly abundant, and from the progeny of the pretty lilac kind, commonly known as altaica, some beautiful mauve, violet, and purple tints are being produced. Probably it will soon be said of the common single Primrose, "that the variety and beauty of the flowers are beyond description." Alex. Dean.

Bedfont.

TWO PRETTY COSMOPOLITAN WATER PLANTS.

An American friend of ours recently brought over some plants of the Bog Bean (Menyanthes trifoliata), rightly thinking such a pretty plant worthy of cultivation, and not knowing that it was a native of British as well as American bogs. The Bog Bean and Bog Arum, like a number of other plants, had common possession of the two worlds long before the white man had crossed the Atlantic. Both these plants have something more in common, *i.e.*, they are both perfectly hardy, thrive in boggy and muddy places, margins of lakes, mud-banks, &c.; both are dwarf in stature, both have creeping stems that root as they creep, both have distinct and graceful foliage, especially when growing freely in rich ground, and both have beautiful flowers. They are plants which everyone who cares for ornamental marsh and aquatic plants should possess.

The Bog Bean.

The Bog Arum.

British Berry-bearing Climbing Plants.—Will you kindly give me the names of a few British climbing plants that bear conspicuous berries?—A. C. [The most attractive berry-bearing native climber is the Red Bryony (Bryonia dioica), the only cucurbitaceous plant found wild in Britain. It has a large fleshy root-stock, palmately-lobed rough leaves, and small spherical red berries. It should be borne in mind that the sexes are borne on different plants. Next comes the Black Bryony (Tamus communis), also diœcious, which likewise has a fleshy root-stock, twining stems, glossy heart-shaped leaves, and oblong red berries. Both of the foregoing are acrid and somewhat poisonous plants. Then there is the Honeysuckle with small bright crimson berries. The wild Roses are also very showy when in fruit.—W. B. H.]

Anemone fulgens in the Holy Land.—I am glad to see reference made (see p. 79) to this beautiful flower. During my visit to Palestine in the spring of 1874, I saw it in great beauty. The slopes of the valley of Ajalon were densely covered with it, and in the valleys of Hinnom and Kedron, outside the walls of Jerusalem, it was difficult to avoid treading on it. One of the finest sights I ever beheld was on the morning of the 20th of March, on my journey from Bethlehem to Jerusalem. During the night the snow had fallen (an exceedingly rare occurrence) to the depth of some inches. The morning, however, was bright and clear, and the sun's rays having somewhat depressed the snow, the dazzling scarlet Anemone had forced itself through the white sheet, standing erect with its large petals flatly expanded, and no other plant or flower being visible. In some places they lay closely together in nebulous clusters, while the whole plain, as far as the eye could reach, was thickly dotted over with the bright star-like gems. The scene was indescribably beautiful, and one not easily forgotten.—Wm. Valentine, *White Abbey, Co. Antrim.*

Wintering Centaurea ragusina out-of-doors.—I take off my cuttings of this in September, and put them in along the base of a north wall, in small beds, consisting of leaf-mould, loam, and sand, with ½ in. of sand on the top. Here they remain all winter, and are never protected except on the appearance of frost, when a hoop, with a mat thrown across, suffices to keep them safe. By lifting a few of the strongest, and potting them in 48-sized pots, using the same compost as above-mentioned, plants may be obtained that will flower during April and May. After potting, place the pots in a cold frame, with a north aspect. I find Calceolarias to do remarkably well under the same treatment.—J. M'A., *Dublin.*

Nightshades.—Will you favour me with the names of the British Nightshades?—A. C. [The Deadly Nightshade, Belladonna or Dwale (Atropa Belladonna) is an erect branching herb, 2 to 4 ft. high, with glossy black berries; the Woody Nightshade or Bittersweet (Solanum Dulcamara), has long trailing or rambling stems, and ovoid, red berries in clusters; and the Enchanter's Nightshade, Circæa lutetiana, is a slender, shade-loving herb, 1 to 2 ft. high, with a capsular, prickly fruit. Solanum nigrum is also sometimes called Nightshade. It is an erect herb, 2 to 3 ft. high, bearing small, spherical, black, red, or yellow berries, according to the variety.—W. B. H.]

Distribution of Rare Alpine Plants.—According to Mr. Rhiner, who has tabulated the species recorded from the different cantons of Switzerland, there are sixty-three peculiar to Vallais, forty-eight to Tessin, thirty-five to the Grisons, and fifteen to Vaud, while Lucerne possesses only two, Glarus one, and Uri and Unterwald none, as well as the vast canton of Berne, which stretches almost across Switzerland. De Candolle seeks to connect the greater richness in species with the earlier disappearance of the glaciers of the glacial period, and endeavours to show that the different geological formations and present climatal conditions have had little to do with bringing about these differences in the vegetation. On the other hand, he remarks that under the present state of things the rarer species of the ancient flora of the Italian Alps present the appearance of plants whose disappearance is imminent. The soil is already occupied by plants better adapted to flourish under the actual conditions of climate and soil, and a succession of exceptionally dry seasons, or the too frequent visits of collectors, will cause them to disappear.

The Giant Christmas Rose.—Permit me to say that the scientific name of the large-flowered Christmas Rose so much in discussion of late is the Helleborus abchasicus of Robert Brown. It increases as well in autumn as in early spring, but if increased in autumn the pieces must be left larger; spring, before the fresh leaves are bursting, is a very good time to increase it: the plant may be cut up into very small pieces, each of which, however, should be provided with at least one rootlet; mere eyes without any root at all scarcely succeed. I had no seeds on my plants, but it does produce seeds in continental gardens.—Max Leichtlin.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Arundo conspicua.—This fine ornamental plant is not sufficiently known, or it would be more extensively cultivated than it is. Ours were unusually fine last season, one plant having had no fewer than sixty-eight blooming stems, 8 to 9 feet high. It is as beautiful with me as the Pampas, though somewhat smaller than the Pampas when well grown, and much earlier.—J. B. E.

Orange Trees in the Open Air (B. M.).—These, if in good health when removed from their winter quarters, may be placed out-of-doors in a warm sunny place. A good time to put them out is the end of May, and they are much better if all their growth is made out of doors. A terrace-walk in front of the conservatory is a good place for them.

Violets in Winter and Spring (B B. A.).—Plant rooted runners or suckers, in April or early in May in good light soil, a foot apart every way; water well after planting and in dry weather, keeping clear of runners and weeds. There are few situations more suitable for Violets than under fruit trees in an orchard In severe weather few or no flowers will be obtained, and to obviate this a plantation may be made in cool frames.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Potting Indoor Plants.—Caladiums should now be started; if they have been allowed to rest for some time, they ought to be shaken out of the old soil and re-potted in fresh material; they succeed best in good loam, with a little leaf-mould and some sand added. In preparing soil for these and for all other plants, the quantity of sand used should be regulated by the description of loam or peat employed; when these naturally contain a considerable quantity of sand, it is unnecessary to add as much as where little exists; for, where potting soil is made over-light by the addition of too much sand, it has the effect of reducing its fertility, and, consequently, unless stimulants in the shape of manure be applied, the growth will be weaker than it otherwise would be. In the case, however, of those who have not had an opportunity of ascertaining the proper quantity to use for the different families of plants, it is best to err on the right side by putting enough; there will then be no danger of the soil becoming sour through being too adhesive. It is the more necessary to urge this, as the generality of beginners in the cultivation of pot plants use too little sand. When light, open material, such as dry, shaly, rotten manure or leaf-mould is added, it has a tendency to keep the soil in a porous state; but additions of these are not usually made, except for such plants as are all or partially shaken out every year. When Caladium bulbs get larger than they are required they may be divided, cutting them in halves or in four, with a portion of the crown with buds attached to each division, smaller plants being generally more useful than such as have got over-large. In all cases, before potting these and other stove subjects, put the soil, before using it, near the pipes, or in some place where it will get as warm as the atmosphere of the house in which the plants are to be grown, and immediately they are potted, place them in heat. I have known such plants as these killed by being allowed to stand for a few days in a cold potting shed, the moisture from the cold soil effecting their destruction. The small C. argyrites is still one of the best, and C. Belleymei, C. Baraquinii, C. Chantinii, C. Wightii, and C. bicolor splendens are all distinct and handsome kinds. A few Gloxinias should also now be potted, using soil similar to that for the Caladiums; the upright varieties are at the present time most in fashion, yet some of the drooping sorts are very beautiful, and look quite as well in a cut state. The following are good kinds, viz., the Czar, Alfred de Musset, Duke of Edinburgh, Panthire, Scarlet Gem, James Brand, Don Louis de Portugal, Magenta Queen, and Mr. Thomas Binney. These are all erect-flowering kinds. The undermentioned are pendent, viz., Angeline, Mogul, M. Alphand, delicata, Grand Monarch, Ne Plus Ultra, Bird of Paradise, M. Grivet, and Mrs. Wm. Bull. When required to flower early, some Achimenes should also now be started. The best plan with these is to procure some seed-pans; place a few crocks in the bottom of them, and over these lay the soil. The latter ought to be quite fine, consisting of ordinary loam sifted, to which one-fourth of leaf-mould and sand should be added. Out of a mixture such as this they can be removed to their blooming pots without breaking their roots. When they have made a couple of inches of growth they will be fit to pot off. All the above plants should be placed in a temperature of 60° or 65° at night, and should be allowed a rise of 6° or 8° during the daytime, giving no more water until they have begun to grow and have formed leaves, than will keep the soil a little moist; for, if too wet at starting, they are liable to rot.

Pits and Frames.—More Seakale and Rhubarb roots should now be put into these, treating them as recommended for those used for the earliest crop. Give Rhubarb in growth plenty of water, for, when well supplied with moisture, it comes much stronger than it otherwise would do. Roots of Seakale, that have been forced, should be laid in sand or ashes, out of the reach of frost; and, if there be not a sufficiency of young roots for planting, some of these may be used for that purpose when the time comes for putting them in. It is now time to get together as much fresh stable-manure as will make up a good bed under a one or two-light frame for raising Cucumbers and similar plants, and also for early Carrots, Potatoes, and Radishes; the manure for such a purpose should, if possible, be mixed with half its bulk of leaves, as a mixture of this kind is sooner ready for use, does not heat so excessively, and retains the heat longer than when manure alone is employed. Material for such beds, whether mixed with leaves or wholly manure, should be well shaken, thrown into a heap, and, if dry, watered. It should then be allowed to remain for five or six days, then turned over again, shaking the whole thoroughly, an operation which should be repeated soon afterwards a second time in a similar manner. In the interval, any repairs, in the shape of broken glass or re-painting that the frames to be used may require, should be done so as to allow of their getting dry before they are put over the bed. Autumn-sown Lettuces, in frames, that are intended for planting out later on, should be examined now, in order to see that the soil does not get too dry; for, although they winter best when the surface of the bed is rather dry than moist, yet they must not be allowed to become over-dry. If it be found that water is needed, let a moderate quantity be given early in the morning, admitting air during the day, so that the top may get dry. Give plenty of air in mild weather to Lettuces more advanced in growth, and to Endive under cloches or hand-glasses. Take the lights off Cauliflowers during the daytime, when dry, whenever the weather is mild. Slugs, if any, should be sought for early in the morning before they have crawled out of sight for the day. In their case destruction is better than prevention, yet a slight dusting with a mixture half soot and half powdered lime will not only keep them in check, but be beneficial to the plants.

Kitchen Garden.—Ground, as it is cleared of winter crops, such as Turnips, Savoys, Cabbages, or Brussels Sprouts, should be manured and dug over, but it is not advisable to clear off all the old stools of these plants unless there is plenty of Coleworts and Curled Greens, or Cottager's Kale to come in for use, as where these are deficient the stumps, if allowed to stand, will furnish a quantity of tender useful sprouts through the spring. A piece of ground should be selected and prepared by moderately deep digging whereon to plant Horseradish and Jerusalem Artichokes. They ought not, however, to have the best position in the garden either as to soil or situation, but they should by no means be consigned to the out-of-the-way corners in which they are often put. In growing Horseradish it is better to follow the practice adopted by the Manchester market gardeners of planting the whipthong-like portions of the roots than the more general system of using the crowns. Under the former method the longest and straightest pieces that can be got of the thickness of an ordinary pencil are put in with a dibble, not straight down as in planting most things, but slanting at about an angle of 45°; the rows should be 2 ft. apart, and the plants 18 in. asunder in the rows. If the soil be well dug and liberally manured, Horseradish will grow as large by this method in a single season as it will in two or three by the usual practice of planting the crowns. In the cultivation of Jerusalem Artichokes the small tubers only should be planted, keeping the larger ones for use. They should not be put closer than 2 ft. 6 in. betwixt the rows, and 18 in. plant from plant in the row. Make holes with a dibble 5 in. deep, raking the ground afterwards to fill them up. The Jerusalem Artichoke likes plenty of manure. The few sunny days that we often get at the beginning of this month frequently induce amateurs who are anxious to keep pace with the season to sow many things that are much better deferred to a little later period. Where there is an unlimited extent of ground it is worth while sowing some things as early as there is a possibility of their succeeding; but, except in the most favoured situations as to soil and climate, it is much better not to put seeds in the ground until the time has arrived that there is enough heat in the soil to at once induce growth and keep them moving on without the check which they inevitably get if severe weather come later on, and which has the effect of not only keeping them back until the later-sown crops are as early, but much more productive. The longer seeds are in the ground before they can make progress, the more they become weakened, and in some cases destroyed altogether. The seeds of many things will be more than usually susceptible to injury from this cause the ensuing spring, from their being indifferently matured through the wet and cold of last summer.

Lawns and Pleasure Grounds.—Where there is any turf laying either for new lawns or croquet grounds, no time should be lost in preparing the ground for its reception, for in all cases after it has been levelled it should be allowed to remain before being turfed until it has been well soaked by the rains; this will cause it to settle, and then whatever inequalities exist can be rectified before the turf is laid down; wherein if it be laid before the settling takes place, it will necessitate its being again disturbed. The same holds good in preparing similar ground for being sown down with grass seeds. Where turf has to be made good on lawns or verges, it should be done at once, so that the Grass may root freely before dry weather in spring sets in.

Conservatories.

With the number of forced plants now coming on there will be no difficulty in making conservatories gay and attractive. An atmosphere just sufficiently warmed by fire-heat, accompanied by a slight movement of air from the ventilators will be the right way to prevent any damp settling on the flowers and disfiguring them. The thick fleshy nature of Camellia blooms renders them very liable to injury, if the air of the house be at all damp; it must, therefore, be kept slightly in motion to dispel it. A temperature ranging between 45° and 50° by night, with a slight rise during the day, will be quite warm enough for any plants that ought to be admitted to these structures, as, when the thermometer rises above 50°, the effects are sure to affect the permanent occupants of the house. Examine the borders in which creepers and other plants are growing to see that they are sufficiently moist to start them properly into growth. If any be found dry, give a thorough soaking with tepid water, and then let them stand till they really require it again. Those gems among conservatory climbers, Lapageria alba and rosea, can scarcely have too much water while growing and blooming, provided they have the right kind of soil in which to grow and are properly drained. During the winter, however, after the blooming period is over, water should be almost entirely withheld, as then the soil has a chance of getting into a sweet healthy condition before growth re-commences. Where these are getting out of condition, from the soil having become close and inert, a good portion should be removed and be re-placed with lumps of tough fibry peat and loam in the proportion of two-thirds of the former to one of the latter. To this add a good sprinkling of sharp sand, and work the whole, when mixed, well in amongst the roots. In starting young plants, prepare the border by putting in a foot or so of porous red brick for drainage. These should be broken up into moderate-sized pieces, and have rough sods of peat laid over them to prevent them from becoming filled up by the soil washing down during the copious waterings required. Over the drainage, a depth of at least 2 ft. of rough peat and loam will be required, and this should be placed in almost as rough as when cut for stacking, when, by throwing some sharp sand amongst it, the body of soil is always kept well open, so that water will pass readily through. The best time for planting or interfering with the roots of Lapagerias is just when they are commencing growth, as then they soon lay hold of the soil. The readiest way of increasing these is to layer some of the strong young shoots, as they are very slow in making plants when cuttings are inserted. The Lapagerias, unfortunately, become infested with thrip and white scale, and without frequent attention in sponging and cleaning soon become sadly disfigured and injured. Care must, however, be exercised in doing this, as the leaves are very brittle near the footstalk, and, if turned up to get at the under-side, often get injured, if not wholly broken off. Where Epacrises and Heaths have to be introduced to these structures, they should, if possible, be placed in the coolest part, where they can have plenty of air and be kept well up to the light. Epacrises, such as miniata, m. splendens, and grandiflora, are almost continuous bloomers, and stand heat and a close confined atmosphere much better than the other varieties, and are, therefore, more useful. Keep such things as Cyclamens and Primulas well up to the light, and water the latter carefully, so as to prevent any lodging in the crowns of the plants. As the double varieties go out of bloom place them in gentle heat on shelves near the glass to start freely into growth before dividing for propagating purposes.

Plants in Rooms.

Select for purposes of this kind such subjects as Dracænas, Solanum capsicastrum, Thyrsacanthus rutilans, and other soft-wooded plants that can be got up quickly, and are of no great value after blooming. Except in very light positions in windows, and other favourable situations, there are few plants that will stand the close atmosphere of rooms for any length of time without suffering some amount of injury; and, therefore, anything choice should be assigned the best positions, or be kept out altogether. Dracænas are, perhaps, the very best for the purpose, as they will stand a deal of ill-usage, and soon right themselves again on being placed in heat and moisture. Their rich-coloured leaves appear to brighten under artificial light, which renders them doubly valuable for room decoration. If these and others having leaves that can be handled remain in long, they should be frequently sponged, as nothing tends so much to keep them in health, or add to their attractive appearance. For table decorations nothing can exceed the beauty of the Thyrsacanthus, with its long strings of gracefully pendent scarlet flowers, drooping from the tips of the plants, and resting on the snow-white cloth. Plants of two years old are best, or such as can be run up with stems at least 2 ft. high, as then the flowers show off to great advantage. No stove-house should be without a few plants of the above, as it is without a rival for table decoration at this season of the year.

Stoves.

Where Bougainvilleas are grown as roof-climbers planted out, they will now require watching to keep them free of large gross shoots, that are sure to break away from the main stems at this season of the year. These should be cut out directly they show themselves, as they grow at a rapid rate, and, if the plants be allowed to become at all thick with growth, the removal of these gross shoots is attended with some difficulty, on account of the numerous sharp-hooked thorns with which the plant is armed. The two varieties now in general cultivation require very different treatment as to time and manner of pruning, although both may be grown in the same house. To flower them successfully, it is very necessary that the roots should be under control and restricted to a certain limited space, which must be in proportion to the extent of roof the plants are to cover. They are naturally rampant growers, and when their roots have full freedom to ramble unrestrained, it is very difficult to flower them in anything like the freedom they are capable of. B. speciosa is, perhaps, the most valuable of the two, on account of its flowering at this season of the year, and lasting in beauty more or less up till May. Although at one time considered a shy bloomer, it is in reality not so when it has its roots restricted so as to prevent a too exuberant growth that it would be impossible to ripen. This is the only secret of success in flowering this charming plant, and where the aspect of the house is favourable to get plenty of sun, so as to insure hard ripe wood, its flowering annually with the greatest freedom may be counted on with certainty. Any wood that may have been laid in too late to ripen properly, and that is not showing bloom, should be cut out to allow plenty of light to colour the bracts of inflorescence forming on the other shoots. B. glabra flowers on the young wood, and the plants should now be thinned out and spurred in to encourage fresh growth and allow room for it. This variety will stand much cooler treatment than speciosa, and may with safety be wintered in the temperature of an ordinary greenhouse, if kept dry at the roots. With cool treatment of this kind it loses its leaves, which in heat it retains all through the winter. As a pot plant for spring and summer blooming, B. glabra is most valuable, as, by introducing one or two into heat at a time, the flowering season may be greatly prolonged. Before starting them into growth they should be freely thinned out, leaving only the strongest and best-situated shoots for laying-in. As soon as they begin to break shake them out of the old soil and re-pot in good fibry loam; give but very little water until they get well into leaf, but syringe freely overhead or keep them in a moist atmosphere. Amaryllises are among the most useful of stove bulbs when treated so as to get them into bloom during the winter season. For this purpose it is necessary to urge their growth forward to mature and ripen the bulbs. They enjoy strong heat, both bottom and top; and I have always found them grow and flower best when placed on the top of hot-water pipes with only a thin strip of wood to keep the bottoms of the pots from touching them. In the summer they are plunged in bottom-heat in pits or frames, where they are kept well up to the glass and fully exposed to the sun, after which they never fail to flower in the most satisfactory manner. The beautiful, free-blooming, soft, lavender-coloured Hebeclinium ianthinum is most valuable at this season, and no plant-stove should be without it. With a little preparatory hardening off it will stand the temperature of the greenhouse or conservatory well, and is therefore doubly valuable on that account. While in the stove it must have abundant supplies of water; but, when removed to a cool temperature, the ball should only be kept just moist. If placed in the greenhouse or conservatory when in bloom, it is one of the most lasting things it is possible to have. Euphorbia jacquiniæflora, going out of bloom, should be kept dry at the roots to harden the wood preparatory to cutting back. These and Poinsettias can be stored away at the backs of stages, or in any dry place where they can have a temperature of 50°. As there will be young plants of various kinds to pot off and shift on almost daily, a good stock of soil of different descriptions should always be kept under cover, so as to be ready to hand when wanted. Any dirty pots should be soaked in water for a few hours, preparatory to being scrubbed and cleaned, after which they must be allowed to become thoroughly dry before being used. Advantage may always be taken of bad weather to carry out such work as the above, also the making of a good stock of labels, flower sticks, &c., as in few places can time be spared for such purposes after spring sets in.—J. Sheppard, *Woolverstone Park.*

Roses.

Roses for forcing purposes are so plentiful now-a-days that sufficient blooms may be had during the winter and early spring months for bouquets and furnishing purposes. To these the beautiful dark Tea Rose, Duchess of Edinburgh, figured the other day in The Garden will prove a welcome addition. The autumn of 1875 was wet and sunless both for pot and out-of-door Roses; and therefore owing to the wood not being well ripened I have found it difficult to get Hybrid Perpetuals to flower this winter, but Tea varieties have been all that could be desired. The best varieties for forcing in December and January—two of the darkest and generally worst months during the whole year for Roses—I have found to be alba rosea, a good white shaded with rose, and one which lasts well, although it is not so stout in the petals as some others; and Devoniensis, a well-known variety, and one of the most useful in the bud state and even when nearly full blown: I find the climbing variety of this Rose to be the best for forcing, as it makes strong wood similar to that of Maréchal Niel, and if treated properly it will produce plenty of flowers. Safrano and Madame Falcot are also two excellent varieties for very early forcing; their colour is a dark apricot, and their flowers are well suited for button-hole bouquets as well as for other decorative purposes. They make large bushes in pots and flower freely. Next to these I would place Isabella Sprunt, a free-flowering kind, and pretty in the bud state. Of rose-coloured Teas, the two best and freest flowering varieties are Goubault and Souvenir d'un Ami, both of which may be had in flower throughout the winter; dozens of fine blooms may be cut from them, and they are very useful for specimen glasses, blending as they do with other cut flowers. Last, but not least, let me name Maréchal Niel, which has proved with me quite a gem this winter. I have cut over sixty well-developed flowers off one pot plant of it. It will flower, too, anywhere, even on the back walls of early-forced Vineries, and may be removed to a cooler house when the leaves of the Vine produce too much shade for it. This variety will withstand more heat than many other Roses, and its blooms being very durable, last longer than those of other kinds, and are not so liable to drop. Where red and white Camellias are plentiful, white Roses are not so much required; but Maréchal Niel, being yellow, is very useful. I started a plant of Maréchal Niel last March; when it was cut down to the pot, it made fresh shoots, on which there are some thirty fine buds, some of which will open and be fit to cut in a few days. The Teas are free-flowering Roses, but those just mentioned should not be allowed to bloom after May. By keeping the flowers off after that time a good break is ensured the following season, and the wood gets much strengthened. I have managed to force a few Hybrid Perpetuals, but they do not bloom so plentifully as the Tea varieties. The sorts which have done best are Dupuy Jamain, Duke of Edinburgh, Fisher Holms, and Jules Margottin. Cheshunt Hybrid is a beautiful Tea Rose, which forces well, but not among the earliest. Roses to follow the above varieties may consist of Niphetos, Belle Lyonnaise, Madame de St. Joseph, Madame Jules Margottin, President, Catherine Mermet, Marie Van Houtte, Madame Margottin, Souvenir de Paul Néron, Souvenir d'Elise, Celine Forestier, and Lamarque.—H. G.

Hardy Fruit.

The weather during the last week or two having been most favourable for planting operations, such ought now to be near completion, if not wholly finished. Planting in autumn and in winter, rather than in spring, is desirable for this important reason, that the roots must, of necessity, be more or less injured by transplantation; and the longer time such roots have to recover themselves, the greater will be the chances of a successful culture. In winter, when the trees are leafless, and the air humid, roots are not of such importance as in spring and summer, when they are in full leaf, and perspiring through every pore, and the greatest demand is then being made on them. Hence the success invariably attendant on early planting. Sometimes late planting is unavoidable; and, when such is the case, extra pains should be taken to mutilate the roots as little as possible; and, as soon as completed, to mulch the ground immediately over the roots to stop evaporation; and, should the atmosphere be dry when the trees begin to break into leaf, they should be syringed. If we could always ensure having a moist genial spring, and plenty of rain in summer, early planting would not then be of such great importance. Apricots ought ere this to be pruned, and nailed, or tied into position. The bloom-buds are far advanced, and a continuance of the present mild weather will induce some of them to open. Wall-coverings should, therefore, be in readiness to be applied on the least indication of a sharp night. Peaches and Nectarines may also now be pruned. These bear their fruits entirely on the new growth of the preceding summer; and if such growths were not laid in too thickly, but stopped, or pinched off in summer, very little pruning will now be necessary other than thinning out old fruit-shoots, and shortening back the immature shoots to where the wood is firm and well ripened, always taking care to cut to a wood-bud, these being easily distinguished from fruit-buds, which are round and plump, whilst wood-buds are small and conical. If the trees were infested with fly, spider, thrips, or scale last year, dress them with a solution of soft soap, sulphur, and tobacco water, which should be mixed to the consistency of paint by the addition of clay or cow-manure, and applied with a small brush to every part of the trees. If the trees were badly affected, the walls also should be covered over with a similar mixture before tying or nailing the trees. When these operations are finished, clear away all the loose inert top-soil from the border, and replace with good maiden loam, with which has been incorporated wood-ashes and a sprinkling of crushed bones or bone-dust. The pruning of Apples and Pears should be no longer deferred; inferior kinds should be headed down, and be re-grafted with better kinds in March, for which purpose collect scions and heel them in till wanted at the foot of a north wall or other sunless spot to prevent the too early bursting of the buds. Strawberry plants that were not mulched previous to the late frosts will, through its action, have become loosened in the ground, and to prevent further injury they should be trodden down again into the soil and at once thickly mulched.—W. Wildsmith, *Heckfield.*

Floral Decorations.

The following list of cut flowers procurable during the present month, although embracing most of those which were mentioned in our list for January, nevertheless contains some important additions. Cinerarias are now coming in, but will not be plentiful before the end of the month; they last well in water, and many of the varieties present very effective candlelight combinations. Dielytra spectabilis, with its lovely pink heart-shaped blossoms quivering on slender stalks, is one of the most beautiful objects that can be found for tall vases, looking well with its own pale green foliage or mixed with Cyperus or Ferns. For large vases and bold effects there is no white flower more valuable than the African Arum (Calla æthiopica), which, however, should always, if possible, be arranged either with its own leaves or with foliage equally large. The forced flowers of the delicate transparent white Bladder-nut (Staphylea trifoliata) may now be had, and are a welcome addition to the bouquet maker, forming, as they do, one of the prettiest coat flowers that can be worn. The beautiful yellow Azalea and invaluable Japanese Spiræa (Astilbe japonica), are now coming in, and will be at our service for some months; but double-blossomed pink and scarlet Pelargoniums are not to be depended upon, neither is it safe to calculate upon Stephanotis, Gardenias, or Begonias. Nevertheless, the list is sufficiently rich in varieties, both of form and of colour, to satisfy any reasonable decorator; besides which, for those who can afford it, there is a numerous selection of Orchids from which to choose.

Blue.—Hyacinth, Siberian Squill.
Purple.—Heliotrope, Hyacinth, Violets.
Mauve.—Heath, Tulip.
Pink.—Azalea, Bouvardia, Camellia, Carnation, Chinese Primrose, Cyclamen, Dielytra, Epiphyllum, Fuchsia, Heath, Hyacinth, Rose, single zonal Pelargoniums, Tulip.
Crimson.—Bouvardia, Camellia, Cyclamen, Epiphyllum, Fuchsia, Hyacinth, Rose.
Scarlet.—Bouvardia, Carnation, Euphorbia, single zonal Pelargoniums, Tulips. Also berries of Arbutus, Aucuba, Cotoneaster, and Solanum, together with seed-pods of Iris.
Orange.—Carnation, Narcissus, Tulip.
Yellow.—Azalea, Genista, Narcissus, Rose, Tulip.
White.—Andromeda, Arbutus, Arum, Azalea, Bouvardia, Cineraria, Camellia, Carnation, Chinese Primrose, Cyclamen, Eucharis, Heath, Hyacinth, Lilac, Lily of the Valley, Narcissus, Paper Narcissus, Roman Hyacinths, Rose, Spiræa, Staphylea, Tulip.

—W. T. T.

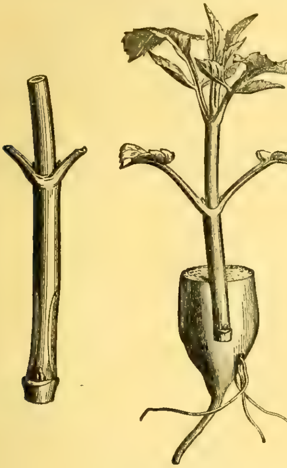
VAN HOUTTE'S "FLORE DE SERRES."

The fourth triple part of the twenty-first volume of this work has reached us, bringing this volume to a conclusion; and though it contains the unusually large number of thirty-one coloured plates (ten double and eleven single page illustrations), it is certainly the least interesting instalment of the work that has come under my notice, as, with the trifling exceptions of a hardy hybrid Azalea of no great beauty named Diamant, and a yellow Tea Rose of no great substance named Amazone, raised by Monsieur Ducher, none of the plants or trees figured in the numbers just alluded to are either new or unknown to English readers. I notice also a falling off in the finish and beauty of the execution and colouring of several of the plates, and many of them are, as has been so often the case lately, borrowed from other works both English and Continental. The plants figured on double plates are as follow:—Æsculus rubicunda, Artocarpus Cannonii, Azalea Diamant, Cerasus Caproniana flore roseo-pleno, Chlorophytum elatum (one of the many synonyms of the plant figured under the name of Anthericum variegatum in the "Floral Magazine," t. 1179), Cytisus Laburnum aureus, Godwinia Gigas, Heliamphora nutans, Ravenalia madagascariensis, as seen in its native habitat, Renanthera or Vanda Lowi; and on single plates, Bertolonia Mirandei, Bolbophyllum Dayanum, Bryonopsis laciniosa, Erythrocarpa, a small hedge of twenty-nine Lilium Brownii, Linaria tristis, Masdevallia Harryana, Picea alba, a mass of Richardia alba maculata, Tea Rose Amazon, Rubus spectabilis, fructu rubro et luteo, and Tulipa Greigi. W. E. G.

The Japan Privet (T. P.)—This is perfectly an evergreen, and one which forms very large specimens in warm positions in the southern counties, thriving fairly well in London. In Rome it is used as a street tree, and forms a handsome one, being trained like a large standard Orange.

PROPAGATING DAHLIAS.

Dahlias are easily propagated either by means of seeds, cuttings, dividing the crowns, or by grafting, and each mode has its own especial merits. Seeds should be saved from the best varieties, and it is a singular fact that, as in the case of the Rose, the earliest flowers do not produce fertile seeds. Towards the end of August the plants intended to bear seeds should be thinned out, leaving only two or three good flowers on each from which to obtain seeds, and if not perfectly ripe on the approach of frost, the branches with the flowers on them should be cut off and placed in glasses of water in a warm sunny greenhouse to ripen. The seeds may be sown in heat in February so as to be ready for planting-out in June. Old tubers placed in a genial bottom-heat in spring yield plenty of cuttings, which, when taken off with a heel in February or March when 4 or 5 in. in length, root freely. They should be potted in any light compost, and should be plunged in a bottom-heat of 75° or 80°. When well rooted they should be hardened off preparatory to planting out after all danger from frost is over. Grafting is useful where it is desirable to give seedlings or delicate varieties a good start by working them on a rooted piece of the tuber of some common variety. A slice of the fleshy bark is taken off each side of the cutting-like scion or graft, and a corresponding slit or cleft having been made in the stock, the two are fitted together as shown in our illustration; and, after being firmly bound, the two are potted in warm soil, and plunged in a gentle bottom-heat, until a union is effected. The lower point or heel of the scion is left exposed, and not unfrequently emits roots itself, after a union with the stock has been effected. Grafting is especially applicable in the case of such large-growing species as D. imperialis, which naturally attains a height of from 10 to 15 ft.; but, grafted on one of the florists' dwarf varieties, its growth becomes much more dwarf and bushy, and also more floriferous. This experiment was tested several years ago by the late Mr. Salter, of Hammersmith, and found to answer perfectly; and by propagating this plant in this manner, it becomes better adapted for pot culture as a decorative plant, forming a useful ornament to a warm conservatory in autumn, when covered with its large white-rayed, well-shaped flowers. B.



Grafting Dahlias.

Fan-shaped Bouquets.—Captain Raikes' fan-shaped bouquets (see p. 75) can by no means lay claim to being either original or new; on the contrary, they are amongst the oldest in use in the northern and midland districts. I have even seen them exhibited at flower shows, between thirty and forty years ago. They are as old as the one-sided plants to be seen in cottagers' windows, and just about as handsome, for no matter how tastefully they may be put together their one-sidedness gives them a formal unnatural appearance.—T. Baines. [Captain Raikes' bouquet, which Mr. Baines did not see, was distinct from the old and well-known type to which he alludes. We think, however, the fan bouquet might yet be greatly improved in point of lightness.]

THE ROYAL HORTICULTURAL SOCIETY.*

By WILLIAM A. LINDSAY.

There are few learned societies which can boast of so interesting and remarkable a history as can the Horticultural Society of London. At the present time, when its affairs appear to have become so complicated as almost to defy the comprehension of the public, a short summary of its history may not seem altogether unprofitable. Strange as it may seem to us, who now live surrounded by such a marvellous number of brilliant flowers, it is nevertheless true that, previous to 1737, but few even of the hardier plants had been introduced into this country. The Rhododendron and Azalea, now such conspicuous ornaments of every lawn and conservatory, were practically unknown in English gardens, and it was not till the middle of the century that the Royal Botanic Gardens were established at Kew. There had, however, been founded in 1684 a nursery to the west of the metropolis, by the spirited gardeners named London and Wise. John Evelyn notices it, and it was without doubt a very important undertaking, probably, however, directed rather to the culture of trees and shrubs than to that of flowers. Of the antecedent period it must suffice to relate, with Mr. Murray, that in the account of English gardens which Didymus Mountain published at the end of the sixteenth century, "the handsomest flowers he could name were Jasmines, Damask Roses, Rose Campines, Pinks, Heartsease, Gilliflowers, and Carnations." The Horticultural Society possesses a small water-colour drawing, representing Mr. Rose, gardener at Hampton Court, in the act of presenting the first Pine-apple grown in England to Charles II. The use of heated houses began to be more generally practised in the first half of last century, and it is a curious commentary upon the state of civilisation in England, that a practice which certainly obtained among the Romans, should so many centuries later have been an "exotic" in a climate so much more in need of it than that of Italy. It is thus no exaggeration to state that, during the eighteenth century, little horticultural knowledge existed in this country. The first person to whom the idea occurred of founding a Society for the furtherance of such knowledge was Mr. Thomas Andrew Knight, who had become known as the author of several original communications to the Royal Society. Living in Herefordshire, in a perry and cider-making country, the loss which resulted from the ignorance of those engaged in this industry attracted his attention. Mr. Knight proceeded to consult Sir Joseph Banks as to the desirability of establishing a Society for the diffusion of horticultural knowledge, and the suggestion was most warmly approved by him. Mr. John Wedgewood was also conferred with, and in the result a meeting took place at Messrs. Hatchard's book-shop in Piccadilly, on March 7, 1804, composed—in addition to the above-mentioned gentlemen—of Mr. Richard Salusbury, Mr. Charles Greville, Mr. Acton, Mr. Forsyth, and Mr. Dickson. The meeting resolved that a new Society should be formed, "to collect every information respecting the culture and treatment of all plants and trees, as well culinary as ornamental, to foster and encourage every branch of horticulture and all the arts connected with it. And that it shall be considered within the intention of the Society to give premiums for improvements in horticulture, whenever it should be judged expedient to do so." The moment was, however, unfavourable to such peaceful labours, and England was in a state of enmity with the French people, just about to create Napoleon Bonaparte Emperor, and to overrun the Continent with renewed invasions; and amid wars and rumours of wars the new-born Society—destined to bear no inconsiderable part in the weightier revolution of thought which has followed the study of natural science —was not likely to attract much popular attention. Its labours were, nevertheless, intended to be at once practical. From the instructive paper read by Mr. Knight on April 2, 1805—the first recorded production of the Society—we quote the conclusion:—"In the execution of their plan, the Society feels that they have many difficulties to encounter, and some prejudices to contend with; but they have long been convinced, as individuals, and their aggregate observations have tended only to increase that conviction, that there scarcely exists a single species of esculent plant or fruit which (relative to the use of man) has yet attained its utmost state of perfection, nor any branch of practical horticulture which is not still susceptible of essential improvement; and under these impressions they hope to receive the support and assistance of those who are interested in, and capable of promoting, the success of their endeavours." It would be impossible to refer even to the index of valuable papers which follow. Of those more peculiarly interesting we may, however, specify that read by Sir Joseph Banks on the "Introduction of the Potato" (May 7, 1805). From it we learn that this vegetable (to our knowledge of which the Horticultural Society has been the principal contributor) was introduced by Sir W. Raleigh in 1586 and that Sir Robert Southwell stated to the Royal Society in 1693 that Raleigh had given it to his grandfather, who conveyed it to Ireland; that Clusius, of Vienna, received it in 1598 from the governor of Mons, in Hainault, who received it himself from an attendant of the Pope's legate under the name of Taratoufli.

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* "St. James' Magazine."

On April 17, 1809, was granted a charter incorporating the Horticultural Society. The Earl of Dartmouth was created president, Mr. Charles Greville treasurer, and Mr. Richard Salusbury secretary. The members of the first Council were the Earl of Powis, the Bishop of Winchester, Lord Selsey, Sir Joseph Banks, Messrs. Acton, Elliot, Knight, Miller, Trevelyan, Dickson, Hoy, and Smith. Three members were to retire at each annual meeting, and to be replaced by others. Between 1804 and 1809 a gradual increase of members had taken place. The grant of premiums had had the most beneficial effects on practical horticulturists, and patronage only was required to ensure success. The publication of the "Transactions" in the form of volumes began in 1812, and it may here be stated that the total number of these volumes cost the Society no less a sum than £30,000. They were without doubt a powerful means of attracting support, and are still of considerable literary value. At this period of its existence the Society paid the modest sum of twenty-five guineas a-year to the Linnean Society for a share of their accommodation in Gerrard Street, thus commencing a friendship between the two bodies which has always continued to subsist.

In 1811 Mr. Knight succeeded, on the death of the Earl of Dartmouth, to the presidentship. He retained the post until his own decease, twenty-seven years later. A large portion of the Society's more valuable work was thus performed under his guidance, and is now bound up with his memory. But in 1811 and following years, the causes which impeded the early progress of the Society increased in force. Europe was the scene of universal war, and England continued to be the principal European power in arms against France. At such a time, and amid the popular excitement in which all classes of society were involved, little progress could be looked for in such an enterprise. Elections were few; but a careful Council kept the expenditure within the income, and each year added a small sum to the Society's balance. This amounted to £258 in 1815, when the return of peace restored the thoughts of the people to legitimate channels. The labours of the Horticultural Society had entitled it to be considered as one of the most useful institutions, and all things thus tended to the approach of prosperity. In May, 1816, there were invested in the Three per Cents. £1000. Elections took place with greater frequency, and in 1818 the income was £1791, and the expenditure £1719, while the funded property was £1400, and the value of the stock £3000 in excess of all debts. An experimental garden was now established at Kensington, and a nursery at Ealing. A house in Regent Street was bought, in 1820, for £4200; and although the subscriptions were raised from two to three guineas new Fellows poured in at the rate of 200 or 300 a year. In issuing the second volume of "Transactions" (1818), the authors of the preface express themselves as follows:—"The Society can hardly be said to have emerged from its infancy; yet it already displays a degree of vigour which is not only calculated to render its present labours beneficial, but holds out the most flattering hopes of what it may accomplish hereafter." Its internal operations "lie open to the judgment of the public in the increased number of the written communications, of which the 'Transactions' furnish the result, in the frequent and various exhibitions of produce at the meetings, and the supply of seeds, grafts, and plants which are distributed. A connection has, for these purposes, been established with almost every part of the globe, by means of the corresponding members, which have lately been instituted." The Society "takes under its care all the variety of produce which the garden can yield, as food and sustenance to man." This preface concludes with the following valuable distinction—"Agriculture performs its operations in the gross, and upon an extensive scale; it may occasionally furnish the gardener with new ideas, and suggest contrivances and manipulations that may facilitate and further his labours. Horticulture, on the other hand, acts in detail; it works with more precision and nicety, and its refinements may sometimes prove of no small benefit to the sister art. Both are employed in the cultivation of the soil, and in eliciting the gifts of the earth; if the one be honoured, the other must also lay some claim to regard."

The practice of collecting seeds from abroad had begun in 1815, and now Mr. John Reeves commenced sending over plants from China. The East India Company assisted in the work, and by these means the Society introduced into England many varieties of Camellias, Indian Azaleas, Chinese Peonies, and Chrysanthemums. Mr. Reeves sent the first Wistaria (Glycine) sinensis, a plant which, we believe, still flourishes in Chiswick Garden. All seeds and plants addressed to the Society were freed from Customs duty by order of the Lords of the Treasury. The importance of sending out collectors to foreign countries now began to be felt and acted upon. "At first," says Mr. Murray, "their attempts in this direction were feeble and hesitating, but with success their scope expanded until they produced results which have affected the appearance of all England. Nowhere can a day's ride now be taken, where the landscape is not beautified by some of the introductions of the Horticultural Society." The first successor to Mr. Reeves was Mr. George Don, who travelled on the western coast of Africa, Mr. John Forbes, and Mr. Potts. Mr. Don alone survived his exertions. Forbes was succeeded by the German botanist Hilsenberg, who had been residing at the Mauritius. Mr. John Dampier Parks was sent to China, and Mr. David Douglas to North America. This last collector was one of the most famous. He enriched this country with a large number of Conifers and fruit trees. Finally, Mr. James M'Rae, a gardener of great practical experience, travelled to the Sandwich Islands in the frigate Blonde. With him the series closed, there having at a later period been three more collectors, of whom we shall speak hereafter. In 1822 the establishments at Kensington and Ealing were given up, and a garden was acquired at Chiswick on a lease from the Duke of Devonshire; and in the following year 1200 kinds of Roses flourished on this spot. In 1822 the Society lost its first great protector—Sir J. Banks.

Subscriptions were now invited for the works which it was determined to undertake in the new garden. Not only were the annual subscriptions raised in amount, but a further sum of £7275 was voluntarily contributed by the Fellows. The Society commenced in 1825 daily meteorological observations, which were for a long period recorded by Mr. Robert Thompson, and have never been abandoned—forming the largest and most trustworthy chronicle of the London climate in existence. But the Society now began to experience reverses. An officer absconded with a large sum of money, and a feeling of distrust for the management resulted. A further cause of dissatisfaction was the abandonment of an annual dinner and the substitution of public breakfasts, thus inviting fashionable support rather than attempting to maintain and stimulate that *esprit de corps* which is so essential to all public bodies. The breakfasts were abandoned in 1831, and were succeeded, on the suggestion of Dr. Lindley—the assistant secretary and well-known botanist—by garden exhibitions. These became exceedingly popular, and retained public favour for a long period of time. Nevertheless, the financial position was most critical. A committee of inquiry was appointed in 1832, which reported that the debts amounted to £20,243, and that the value of the property was but £16,500. The cost of the garden works had exceeded the sum subscribed for them by £29,000. The management was condemned, and, in consequence, Mr. Sabine resigned the secretaryship, to be succeeded by Mr. Bentham. A determined attempt was made to retrieve the Society's position, but it was considered of paramount importance to maintain the scientific work. Between 1830 and 1855, in addition to the money allotted to the payment of debt, £11,000 was spent on the garden and £7000 on foreign importations. Mr. Knight died in 1838, having been, as Mr. Murray records, the chief mover in all the Society's proceedings from its origin. No successor could hope to fill his place in so far as scientific ability was a necessity; but in devotion to the Society's interests he has fortunately found rivals. The Duke of Devonshire was elected President—a nobleman who had availed himself of the many opportunities he possessed for benefiting the Society. Under his *régime* Mr. Hartweg was sent to Guatemala; and in 1842 Mr. Fortune—who had commenced his great services to horticulture as superintendent of the hot-house department at Chiswick—started for China, and was the introducer of many valuable plants indigenous to that country. His principal fame was, however, acquired by the study of the cultivation and manufacture of Tea. His mastery of this subject resulted in his appointment by the East India Company to establish that industry in their possessions. Notwithstanding the enthusiasm which all these labours and successes must have stimulated, the Society was much hampered, as all such bodies are, by the non-payment of subscriptions. No less a sum than £12,879 had to be abandoned as irrecoverable between 1824 and 1855. Had it not been for this unhandsome conduct, it may be doubted whether any serious debt would ever have been incurred. At no time since 1828 had the liabilities exceeded £14,331, and, at the period of which we are speaking, the total debt had been reduced to £9986. The exhibitions now began to fail. Their popularity had raised up competitors nearer to London than Chiswick, and the public accordingly recoiled from the distance of the latter spot. In 1855 Her Majesty's Commissioners for the Exhibition of 1851 lent Gore House and its grounds to the Society, but it was not found that the tide of prosperity ceased to ebb. The exhibitions were a source of loss instead of profit, a result which continued to attend them, when a few Fellows subscribed to restore them at Chiswick. An address was accordingly issued by the Council on the 29th January, 1859, stating that the exhibitions would be given up, and the garden maintained only for experiments; also, that it had been determined to give up the house in Regent Street as too expensive, and, consequently, to sell by auction the collection of books which had been amassed during the previous forty years. An office was then acquired in St. Martin's Place, Trafalgar Square, at a rental of £80 a year. The effect of these changes was not merely to reduce the annual expenditure, but to bring down the liabilities to £4694, as against a floating property valued in 1857 at £14,674. We have been thus particular in recording the financial position of the Society in 1859, because it has constantly been misrepresented, and because it is only with a full knowledge of the details given that the extraordinary changes which followed can be truly criticised. In 1858-59 the annual subscriptions amounted to £2322, and the income from all sources in that year was £3810, to meet an expenditure of £3416, with a further liability on the year of £939. The outgoings have been, as we have shown, reduced by the changes we have chronicled, so that the position could certainly not be termed desperate. The Society was less insolvent than it had been since 1828, and there is no reason to suppose that the policy determined upon would have failed to maintain its condition, and to re-establish its finances, in whatever degree it may have lost prestige.

The Duke of Devonshire died in 1858, and H. R. H. the Prince Consort graciously allowed the Society to elect him as their new President. The introduction of this master-mind into the Society's Council resulted in a scheme of extraordinary magnitude and splendour. The Prince, being also at the head of the Commissioners for the Exhibition of 1851—who were endeavouring to settle on some plan for the laying out and embellishing of their newly-purchased estate in South Kensington—conceived the idea of bringing the two bodies together, and of making a Horticultural Garden as an integral part of the Commissioners' design. A correspondence took place on this subject between the respective officials, and on July 7th, 1859, a special general meeting of the Society took place, at which a scheme was submitted to and generally approved by the Fellows. It was proposed that £50,000 should be spent on each side; the Commissioners to erect architectural buildings round the garden, and the Society to lay out the grounds; that a lease should be granted for thirty-one years with a right of renewal or of receiving a stated compensation for disturbance; that the Society should pay by way of rent such sum as should remain after the payment of the interest due on the amount it should borrow, and of the sums necessary for the maintenance of the garden, until the whole of the interest due on the Commissioners' outlay should have been met, and then half of any further surplus; finally, that a right of re-entry should accrue to the Commissioners, if the stipulated minimum of rent should fail to be paid for five successive years. An arrangement was ultimately made on the basis of this scheme. But in regard to the last item, it is material to notice that on the 20th July the following resolution was passed by the Fellows: "That the Council be instructed not to accept the clause about renting in case of failing to pay interest for five years, and that in the event of the Commissioners cancelling the lease, an equitable adjustment of mutual interests be made." No trace exists of any subsequent attention on the part of the Council to this somewhat decisive and peremptory minute. In order to enable the Society to enter upon this undertaking, a new charter was granted by the Queen. In consideration of the distinction enjoyed by the Society in the person of its President, the title was altered to that of the Royal Horticultural Society. The Prince Consort was created President. No material difference exists between the new and old charters except that the previous inability to remove the Council seems to have been taken away. The sum of £50,000 was raised on the security of debenture bonds, and, surprising as it now seems, the money was subscribed with great rapidity. Her Majesty made a donation of £1000, and purchased life-memberships for all her children except the Princess Royal of Prussia, who herself became a life-member; a course which was also adopted by the Royal Highnesses the Duchess of Kent, the Duchess of Cambridge, and the Princess Mary of Cambridge. The example thus set by the royal family was followed by about five hundred other persons, including many of the highest rank.

The annual report presented in 1860 was couched in very different terms from that of the previous year. We read that "great retrenchment in a public body was too dangerous a course to be permanently adopted. It could only be effected by inaction." The debt had been reduced to £4296, and "liabilities so small as these have ceased to have any significance;" for the Council "entertain the confident belief that the Society is now entering upon a career of utility and prosperity such as it has never before experienced." On the 19th of March, 1861, the Council obtained permission to increase the outlay to £70,000. The formal opening of the new garden took place on June 5th, 1871. Her Majesty the Queen paid a private visit early in the morning to the grounds, and was accompanied by His Majesty the King of the Belgians and H.R.H. the Prince Consort. The Queen of the French and the Duc de Nemours also visited the garden. The extraordinary enthusiasm with which this great work had been undertaken was fully manifested in the ceremony which followed later in the day. A procession formed of the workmen engaged, and of the officials of the Society, together with a large number of the Commissioners, was followed by the Prince and ten other members of the royal family. The Prince Consort made, in answer to an address read by Dr. Lindley, one of those admirable speeches which so often indicated the deep and original reasoning power of his mind. After referring to the labours in which he had shared, His Royal Highness said:—"That which last year was still a vague conception, is to-day a reality; and I trust will be accepted as a valuable attempt, at least, to reunite the science and art of gardening to the sister arts of architecture, sculpture, and painting. This union existed in the best periods of art when the same feeling pervaded and the same principles regulated them all; and if the misuse and misapplication of these principles in later times have forced again upon us the simple study and imitation of Nature, individual arts have suffered by their disjunction, and the time seems now arrived when they may once more combine, without the danger of being cramped by pedantic and arbitrary rules of taste." Special prayers were then said by the Bishop of London; after which one of the finest exhibitions of flowers and fruit ever witnessed was opened to the public.

The pomp with which it had thus been surrounded did not prevent the Society from reverting to one at least of its more appropriate labours. Mr. Weir was sent out as a collector to Brazil. His exertions were of the greatest advantage to the Society; but at last, after enriching this country with several new plants, he succumbed to fever and paralysis, and was sent home. No collector has since been employed by the Society. It was in the midst of the difficulties which had to be surmounted for the complete success of the South Kensington establishment that the Prince Consort died. Of the loss which the country thus sustained it is needless here to speak. The effect on the Royal Horticultural Society was irreparable. Nothing but the prolongation of the prince's life could have made success in its new operations possible. Saddled now with a bonded debt of £50,000, having to maintain a garden which could, under no circumstances, cost less than £3000 or £4000 a year, in addition to the experimental ground at Chiswick, on what had it to rely for an adequate income? On voluntary subscriptions only. A yet more serious danger than that of uncertainty of revenue was unforeseen, and could only be apprehended as it became manifest. The Commissioners for the Exhibition of 1851 and the Society gradually ceased to be animated by a common aim. Further, the Society had an inherent difficulty to contend with. As a general rule, learned societies are able to assume that those who seek admission into them have for their object the promotion of the special science or art in the interests of which they are incorporated. Previous to 1860 the Horticultural Society had been no exception to this rule. But now other motives might, and often did, prevail—motives connected with the use of the new garden as a place of recreation or of social entertainment. A large number of Fellows was thus admitted who knew nothing and cared nothing for the magnificent work which the Society had done, and who had no interest in its being resumed. From 1860 to the present time matters have proceeded from bad to worse. 1862 and 1871 were the only years in which the income availed for the discharge of all the annual engagements, and in each year success was owing to the existence of an International Exhibition. In 1873, a Council composed largely of men known to the world of science was displaced by the Fellows, under great provocation, and their places were supplied by gentlemen instructed particularly to maintain the rights of the resident Fellows. Each successive Council has done its utmost to avoid failure, and these efforts appear still to be prolonged, but as yet with little result. Men of science begin to look on the Society with suspicion, and the residents at South Kensington seem to care little to support its garden.

What then should be the cure for such prostration? We have shown, historically, that the Society has been remarkable for three special kinds of external work in addition to the internal labour of its committees and officials. These are—1. The publication of papers on details of horticultural science. 2. The mission of foreign collectors. 3. The holding of exhibitions. In the latter the Society has now many rivals. The Royal Botanic Society, the Crystal Palace Company, and many other bodies scattered over the country, hold these shows with success. It is a mere question of money. Whoever gives the largest amounts in prizes will secure the best exhibition. Consistently with retrenchment, the Society can maintain no pre-eminence in such work. The mission of foreign collectors is now undertaken by several of the principal nurserymen; and we believe that some of these expend a large time every year in this branch of their trade. A practice which was of great value at a time when no individual in the country had energy to adopt it, ceases to be important when a large portion of the globe has been explored, and the remainder is being diligently investigated by private persons. The publication of papers remains, and in this special department the Horticultural Society has as yet no competitors. But to publish on a scale equal to the early "Transactions," the Society must expend large sums. Crippled as it is with a garden (and a debt) such as that in South Kensington, no such publication is possible. It appears, then, to follow, that either all scientific work of a kind to attract the public and maintain the world-wide reputation of the past must be abandoned by the Society, or the garden at South Kensington must be given up. The garden itself is, horticulturally, a failure, and its beauty principally architectural. Flowers can only be brought there to expend the luxuriance they have elsewhere acquired. As a place for exhibition, it is needlessly large. As a meeting-place for the local Fellows it may have some value of a social kind; but to maintain a garden with this object is hardly within the scope of the Society's work. Melancholy, then, as it is to confess that the brilliant scheme of 1860 has failed, it is impossible to resist this conclusion, and it would be foolish any longer to shut our eyes to it. A Society which has contributed so much to the beauty of English life has some claims on the national gratitude, so long as it fulfils its vocation. It is our earnest hope, therefore, that its Council will ere long apply their energies to the liberation of the Society from its engagements, and to the resumption of scientific work at Chiswick. Some convenient office in London could again be opened where meetings might be held, and a new library be collected. In this way only can the extinction or degradation of the Society be avoided. But if no such restoration take place, and if it should appear that the mission of the Royal Horticultural Society has been fulfilled, it will have contributed in no small degree to science and art in England. Its publications form a library of important papers; and its labours have created the modern garden. Of the latter we have spoken. As to the former, it must suffice again to remind the student that no education in natural science can be considered even approximately perfect which has not included their perusal. There is no step in the ascent of knowledge which they do not illustrate; and as the reader rises from the consideration of the special flower to the comprehension of the class, and from the examination of such laws as govern heat and chemical action in relation to the vegetable kingdom, to that point at which all natural sciences appear to converge, he cannot but feel that had it not been for the Royal Horticultural Society his education must have begun at a far lower stage of knowledge.

Prize Potato Crops.—Last spring Messrs. B. K. Bliss & Sons again offered premiums for the largest yields from 1 lb. each of Snowflake and Eureka, two of their new varieties of Potatoes. The awards have been made, and a full report of the committee will soon be published. The returns are simply astonishing, but they are thoroughly substantiated by evidence and affidavits. Such large yields were of course obtained by every legitimate aid—the eyes of the Potatoes, greatly sub-divided, and soil already very rich, pushed to its utmost with fertilisers. The report gives many interesting particulars; here we ("American Agriculturist") can only give the yields and the awards. Largest yield of Snowflake from 1 lb. of seed—first prize to Mr. P. C. Wood, Esther, Ill., 1417 lbs.; second prize to Mr. J. L. Perkins, Little Sioux, Iowa, 1304 lbs.; third prize to Mr. Seiler, Verona, Essex County, N. J., 1125 lbs. The largest yield of Eureka from 1 lb. of seed—first prize to Mr. Perkins, Little Sioux, Iowa, 1666¾ lbs.; second prize to Mr. Wood, Esther, Ill., 1403 lbs.; third prize to Mr. Alfred Rose, Penn Yan, N. Y., 1149 lbs.

Prizes Offered by the Westminster Aquarium Company.—For the exhibition to be held on April 12th and 13th there are thirty-one classes, amongst which we note a first prize of £12 for twenty standard Azaleas, and a similar sum for fifty plants of Cyclamen persicum; a first prize of £7 is offered for twelve forced Rhododendrons, and £1 for six Orchids (amateurs and nurserymen), and for three plants of Cœlogyne cristata. On May 10th and 11th the leading first prizes are—£25 for twelve Roses in pots (open); £10 for six Roses in pots (amateurs); £18 for twenty Roses in 8-in. pots (open); £12 for twelve new and rare plants; £12 for twelve distinct Dracænas (nurserymen); £10 for eight gold and silver tricolor Pelargoniums. The show on May 30th and 31st ought to be a good one inasmuch as there are seventy-two classes, and the highest prizes offered are £50, £30, and £20. Amongst the other chief prizes are £25 for twelve stove or greenhouse plants, and £15 for eight of a similar kind; £20 for twelve Orchids (nurserymen); £12 for eight Orchids, twelve new plants, eight greenhouse Azaleas, eight show Pelargoniums, nine fine-foliaged plants, four tree Ferns, &c. On July 5th and 6th Roses will be the chief feature, the highest prizes being £10 for seventy-two single trusses, forty-eight varieties, three trusses of each, and forty-eight single trusses (amateurs), and twenty-four Roses in 8-in. pots. Four prizes of £25, £20, £15 and £10 respectively will be awarded at this show for dinner-table decorations. For the exhibition of fruit on October 4th and 5th there are sixty-eight classes, the prizes in all cases being very liberal. Six classes are provided for exhibitors from the Channel Islands and English fruiterers who cannot compete in any others.

Schreiber's True Friend Lamp Stove.—This will be found valuable in winter for heating small plant structures, of which there are hundreds scattered over the suburbs of London. With such houses all goes well during summer, but when the dark, dull days of autumn set in, and damp and frost make their appearance, the want of some heating power is seriously felt. The question naturally arises, what contrivance will best enable us to overcome these evils? I unhesitatingly reply, this lamp stove, which is both cheap and economical. My greenhouse is a tolerably large one, and, unfortunately, owing to having to be raised so that the floor might be on the same level as that of the sitting-room; it is open beneath, and, therefore, frost attacks it below as well as above. Under these circumstances, I gave this stove a trial during the severe weather, just before Christmas, and it proved satisfactory. It has a powerful German round burner, by which means the air is heated in passing through the stove, without emitting any unpleasant odour, or becoming in any way injurious to the plants. I have burned this stove forty-eight hours at a stretch, and the plants have not suffered in the least, but, on the contrary, looked as healthy as could be desired. I use ordinary paraffin oil of good quality, and when the lamp is burning I frequently take off the lid at the top, and place on the opening a common garden pan filled with water. This becomes heated in a short time, and gives forth steam, which moistens the air, and no doubt benefits the plants.—R. D.

LAW.

Allen *v.* Martin.—This was an application in the suit relating to the Euston Square garden, which has been left in such a disgraceful state for months past by a contractor who had undertaken to put it in proper order. In July last an order was made that the defendant Martin should stand committed to Holloway prison for disobeying the injunction of the Court by continuing to excavate gravel and to shoot dust-bin refuse in the Square garden, which he was under contract to put in order. The order for committal was not, however, put in force till October, since which date the defendant had been in custody. He now applied for his discharge, having made an affidavit submitting himself to the clemency of the Court, and further undertaking to cancel the contract and not to interfere further with the garden. Mr. Romer, for the applicant, submitted that the defendant, having cleared his contempt of Court, should not be detained in further custody till the costs of the commitment were paid. Mr. Edward J. Foster, for the plaintiffs, contended that the payment of these costs should be made a condition precedent to the defendant's discharge, his inability to pay these costs not being established. The Vice-Chancellor said that since the Debtors' Act, 1869, he could not keep the defendant in prison until these costs were paid. There must be an order for discharge, in which might be stated the undertaking of the defendant with respect to cancelling his contract. The order would also direct that the costs of the commitment and of that application should be paid by the defendant, and the plaintiffs would be left at liberty to enforce that order as they thought fit.

NOTES AND QUESTIONS—VARIOUS.

Prince Albert Pine Apple.—I cut up a small fruit of this variety last week, and found it in all respects excellent. Inside it is deep yellow and almost scarlet outside. In form it is conical and handsome, and when better known it cannot fail to be largely grown.—R. Gilbert, *Burghley.*

Æthionema grandiflorum.—This beautiful plant, figured in The Garden last week, is very impatient of transplantation, and hence there is some difficulty in its culture. Seedling plants are the best, and they should when young be planted where they are to remain. They will in time form very neat bushes. It is a true rock plant, and one of the best we have.—R.

Tuberous-rooted Begonia Grubs.—Everyone of the tubers of these Begonias should now be closely examined, as they are unfortunately liable to the attacks of a white grub or larva, similar to that which bores through and destroys the roots and crowns of Primula cortusoides amœna and double Primroses when grown in pots. It eats into the heart of the tuber and causes it to decay, if not discovered and removed in time. The eggs of this troublesome insect must be deposited in the soil the season previous. Fortunately their white colour renders them easily visible to the careful eye.—G.

Cologne Exhibition.—The Commissioners of this Exhibition have awarded to Messrs. Dennis & Co., of Chelmsford, who were the only British exhibitors of horticultural buildings, a diploma, gold medal, and 2000 marks for their Victoria Regia house, and also a diploma and 750 marks for the heating apparatus for the same. Mr. Laing, of Forest Hill, has also received a diploma and medal.

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> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

THE WILD GARDEN IN SPRING.

One of our brightest harbingers of spring, and doubly welcome on that account is the gay little winter Aconite (Eranthis hyemalis); it may well be called the winter Aconite, blooming, as it does, in the earliest spring months, and often before the snow is off the ground its little yellow flowers are seen perched on whorls of shining leaves, somewhat resembling the "ruffs" of our forefathers. This useful little subject should be planted abundantly not only in the wild garden, but on slopes in the pleasure-ground, in the bays of shrubberies, and under the branches of deciduous trees. It may even be introduced towards the outer edges of the lawn as its foliage dies down sufficiently early not to interfere with the mowing of the Grass. A few patches, carefully planted here and there, will soon increase, and its cheapness should be an additional inducement to its being grown abundantly. In the wild garden it is quite indispensable. Here, we have it everywhere in large masses peeping through carpets of the small Periwinkle (Vinca minor), blue, white, and purple, and the effect is very good. The bloom of the Vinca is a trifle later than that of the Aconite, but they flower so nearly at the same time that both are often in bloom together. There are double forms of the Vinca, but I do not think them so good as the single ones. V. rosea has very small pretensions to its name, being a purple blue. V. major is almost too rampant, except for very wild spots, under trees or elsewhere, in which it will be found useful. It is surpassed by its variegated form, which is a very desirable plant. Vinca herbacea is more fitted for the garden, as it is not so vigorous as the preceding. It has herbaceous stems, and succeeds better in open spots. The Winter Aconite is, however, not the only spring flower set off by the dark green leaves of the Periwinkles. The Snowdrops, both double and single, are equally numerous, and are too well known to need any tribute of praise. A single Snowdrop flower is exquisite, but the effect is proportionately enhanced when we see them (as here) in thousands and thousands. A rarer species is Galanthus plicatus, which must, at present, be confined to the flower garden, at least till it is more plentiful. It is not a plant commonly seen, though it has been introduced several years. The flower resembles that of the common Snowdrop, but it is a trifle smaller, the bulb, on the other hand, being larger. The name plicatus has been given to it from the appearance of its leaves, which are folded lengthways near the edge, and on both sides. It comes from the south of Russia, and blooms in February and March, and occasionally in April. I have seen the names also of G. reflexus and G. Imperati, but do not know anything about them. In the shrubberies here, on each side of a long avenue, we have the common Crocus in every shade of purple (there are scarcely any yellow ones) growing literally in hundreds of thousands. We have no record of when the roots were originally planted (and the oldest people about the estate say they have always been the same as far as their recollection goes); but they grow so thickly that it is quite impossible to step where they are without treading on two or three flowers. The effect produced by them in spring is magnificent, but unfortunately, their beauty is but short-lived. I have transplanted a good many roots to the wild garden to the great improvement of the size of the individual blooms; they are so matted together in the shrubberies I have mentioned, and have remained so long in the same place that the flowers are small. We have also great quantities of Primroses of every colour, from dark crimson to white, including every intermediate shade, owing to their having been crossed and re-crossed through natural agencies. These were probably planted at the same time as the Crocuses and Snowdrops, and the result is a most pleasing and very uncommon spring garden. When their beauty is on the wane they are succeeded by glorious varieties of Daffodil, principally the fine old double kind. I may add that only those who have grown bulbs (particularly spring ones) among Grass have really seen them in perfection. Of course, spring bulbs look well in any position, whether in lines or patches in the flower-beds, but they are incomparably superior when seen peeping in irregular clumps from amongst dwarf vegetation. When once the flush of bloom has passed, the decaying leaves and stems are unnoticed in such spots as these, whereas in the garden properly so-called they are most unsightly, for what can look worse than tufts of Crocus leaves tied up (as they often are) in the form of brown wisps? pend upon it, the less artificial the style of gardening the more pleasure it gives, and my great ambition in the wild garden is to produce a result similar to what Nature would do if left to her own devices. Only those who have tried to imitate her graceful irregularity can tell (unfortunately) how far our best efforts fall short of her most ordinary productions.

Oxon.

VALUE OF HERBACEOUS BORDERS.

Those who do not possess a good mixed herbaceous border should lose no time in forming one in some suitable situation, as the best season for planting it is now at hand. A suitable site for such a border may generally be found without encroaching on the flower garden properly so-called. Borders hitherto devoted to the ribbon style of planting may easily be converted into mixed borders, and with good results, inasmuch as such a border always yields something for the flower basket, as well as forms an object of interest in itself from early spring till late in autumn, and, indeed, throughout the year, for the last fiery spike of the Tritoma will have scarcely faded before the Christmas Rose is unfolding its blossoms, and these are quickly followed by Aconites and Hepaticas in continuous succession, which, if they do not rival bedding plants in brilliancy of colour at any one time, are at least free from their faults. The mixed border, too, has a decided advantage in point of fragrance; for in it Roses, Cloves, Pinks, Musk, and Mignonette find a suitable home, as do also hosts of other sweet-scented plants. Neither can any plant, whether annual, biennial, bulbous, or bedding, be considered out of place in it, nor is one obliged to get up a stock of any particular kind of plant before placing it in its permanent quarters. Moreover, many plants enjoy being left for years undisturbed, a luxury which bedding plants can never experience. Compare, for instance, the growth of Tulips, Hyacinths, Crocuses, and similar plants that may be fortunate enough to find a home in the mixed border with that of those that are torn up with foliage half matured to make room for summer bedding plants. The difference between the two will at once be obvious, to say nothing of impairing their vitality through exposure during the hottest months of the year. That splendid autumnal flower, the Gladiolus, if left permanently in the ground, is always much better than when lifted and re-planted. There is also a host of plants that are not adapted for bedding out in any department that one scarcely knows what to do with unless a mixed border is available. Phloxes, Lilies, and Carnations, for example, all look better singly than when arranged in separate beds, as they often are in botanic gardens. There is no necessity for allowing strong rooting plants to overgrow their weaker neighbours, or self-sown seedlings to give the mixed border the aspect of a wilderness; but the pruning, training, and, above all, the digging practised in the mixed border should be done with care and judgment. If well prepared at first, a good surface-dressing of well-decayed manure or mould applied annually will suffice to keep it in good condition, until it will be found desirable to lift and re-arrange the whole of its contents.

James Groom.

Henham.

An Effective Plant Stand.—At the house of a friend, a short time since, an arrangement of plants in an ornamental stand attracted my attention as being most effective and elegant, and the stand itself was anything but an expensive one, being of wire in the form of a circular table, with perforated balcony or edging round the margin; the table stood on supports about 3 ft. high, and underneath, about 6 in. from the ground, has an ornamental case for a pot plant. The edging of the table and pot case, if I may so term it, were gilt, and all the other parts were painted white; the pot receptacle and edging of the table were lined with zinc, also painted white, against which the gilt lattice-work came out well. The flower arrangement of the ornamental pot case consisted of a well-grown plant of Adiantum cuneatum, and the table or tazza had an outer circle of plants formed of white Primulas and Isolepis gracilis placed alternately; inside of these was another circle of a higher growth, consisting of mixed varieties of Ferns, while the centre was finished off by a Cactus (elevated), whose magenta flowers had a most charming effect. This form of stand could be quite as effectively fitted up with other plants as those enumerated above, but, just at this season, arranged, as I have described, it looked very neat and pretty. Lilies of the Valley could be introduced in place of some of the pots of Primulas. —Annie Hassard.

ROYAL HORTICULTURAL SOCIETY.

At the adjourned anniversary meeting of this Society, held at South Kensington, on Thursday last, the 10th inst., the annual report of the Council for the past year was adopted by a large majority, after a warm discussion on the part of both horticulturists and resident Fellows. The accountants' report shows a balance in favour of the Society of £850 10s. 2d. It was, however, pointed out that this favourable result is mainly produced by crediting revenue with £786 16s., being the proportion for the year chargeable (under agreement with the Royal Commissioners) to the Life Composition Account. The actual result of the transactions of the year is therefore (after crediting revenue with £207 18s. on account of annual subscriptions in arrear) a balance in favour of the Society of £63 14s. 2d. This result, however, compares favourably with that of 1874, as in that year, after crediting revenue with £790 6s., proportion of Life Composition Account, there was a balance against the Society of £223 15s. 3d. Since completing the balance sheet and account the assistant secretary has reported that there are still some items, amounting to about £100 (the accounts for which had not been sent in) to be charged to the debit of revenue, which must be taken into account in considering the balance in favour of the Society.

Report from Chiswick.

The Board of Direction at Chiswick report that a great deal of good and important work has been carried on during the past season. That the crops of fruit have been plentiful, but owing to the great want of sunlight and extreme moisture, not only has the flavour been very inferior, but many varieties have decayed prematurely, an observation which seems to apply very generally throughout the country. The matter of the greatest interest which came before the Board, as regards the Fruit and Vegetable department, after the adjudication with respect to the trials of Onions, Celeries, and the more perfect definition of the several varieties of Currants, of which the Society possess a very complete collection, is the discovery, which has so long been a desideratum, of the resting-spores of the Peronospora, to which the formidable Potato murrain is due. Some peculiar features soon manifested themselves in a large collection of American varieties of Potato, which are under experiment. It was not, indeed, the first time that these features had been observed, for they were well known to Mr. Barron, who had remarked that they were far more pronounced with respect to English-grown sorts, than with those which were immediately imported from America. Indeed, these latter seemed free from disease. During the early part of this year the disease was so prominent, not only in the garden, but generally over the country, as to call more general attention to the subject. It was, indeed, intimated that the matter was exaggerated, or indeed was altogether denied; but the slightest inspection showed that there was enough for serious inquiry. Some peculiar bodies had been observed in the blackened leaves, which were supposed to belong to some species of Protomyces, but Mr. Worthington Smith at once conceived that they might be the long sought resting-spores, and carried out the matter so perseveringly that he arrived at complete certainty on the question. It remains only to be observed how these resting-spores may comport themselves when germinating in the spring, and we trust that Mr. Smith will add to the honours, which he has so well merited, that of ascertaining this closing point in the life history of this destructive pest. The crop of fruit of all kinds has been unusually abundant in the garden this year, and many varieties which have not hitherto fruited have been observed, and descriptions of them have been made. An opportunity has also been afforded for correcting erroneous nomenclature and of ascertaining synonyms. The varieties of Currants have for many years been very much misunderstood, great confusion having existed as to their nomenclature and identification. A collection of as many kinds as it was possible to obtain, both at home and abroad, was secured, and the number of reputed kinds planted in the garden amounted to 50. When these were examined, and compared one with the other, it was found that there were only 16 distinct—12 of them being red, 1 flesh-coloured, and 3 white. One of the largest experimental trials of Onions which has ever been undertaken was carried out very successfully. 158 samples were sown under 98 different names. These were all carefully compared and referred to their proper sections, whereby that large collection of reputed varieties was reduced to 20. A full report of this trial has been already published (see p. 20), and as this was confined to the spring-sown sorts, the remainder, consisting of the Tripoli and Silver-skinned sections, are now under trial as autumn-sown Onions, and will form the substance of a future report. A trial of all the varieties of Celery was also very successful, and out of 47 sorts that were sown, 20 proved to be distinct. A full report of this trial has also been published (see p. 94). An attempt was made to obtain a full report on the numerous varieties of the Kidney Bean, but the season being cold and ungenial this proved a failure, and another trial will be made this year. An attempt was also made to investigate those varieties of Potatoes that had not been included in the former trials, but the virulent attack of the Potato disease to which they were subjected rendered the experiment a failure. A complete collection of all known varieties of Cauliflower has been sown for trial during the present season. It was found that the Potato disease this year attacked chiefly the new American varieties, grown from home-grown seed of the second year after their introduction; and it has been further remarked that all those New American Potatoes which produce such enormous crops from newly imported seed rapidly degenerate year by year after their introduction, and that the produce gradually becomes smaller and of inferior quality. The extensive collection of Strawberries which was planted for the purposes of trial, promises to fruit well this season. During the spring months the Floral Committee examined the collection of Bedding Violas which Mr. Barron had got together, consisting of some eighty-two varieties, and amongst them seventeen certificates of merit were distributed. Later on, a collection of Fuchsias, grown alike, in comparatively small pots, and consisting of 125 varieties, underwent the scrutiny of the same body, and on this occasion twenty certificates were awarded. These were cultivated under glass. In the open-air beds, a large contribution of Zonal Pelargoniums, from the principal nurserymen and florists, and consisting of 350 varieties, was planted out, and amongst them seventeen certificates were distributed. Besides these subjects, considerable collections of Phloxes and of Pentstemons were planted for inspection and comparison. The plants prepared at Chiswick for the decoration of the Garden at South Kensington always draw heavily on the labour and other resources of that establishment. During the past year there have been provided in this way, and devoted to this object, 12,000 flowering plants for the ornamentation of the Conservatory, and 52,000 for bedding out in the Garden. The Conservatory Plants, calculated at the low price of 1s. each, give a return of £597 16s.; and the Bedding Plants, valued at from 1d. to 4d. each, a return of £457 17s., making a total of £1055 13s.; the whole expenditure on maintaining the Garden during the past year being only about £1500.

Skating "Rink" at South Kensington.

A correspondent of the "Times" has had something to say about the latest efforts of the Society to prolong its existence by means of a skating rink. "A Guarantor of the Exhibition of 1851" thinks a "rink" has nothing to do with the science and art of horticulture. The promoters of this idea, being men of "serious" views, seem unaware that the ruined foundations of a "rink" now disfigure the south end of the gardens at South Kensington. Lord Bury and Sir Alfred Slade's Council began a "rink" last year, but being threatened by an injunction from Her Majesty's Commissioners (the trustees of the estate), it was abandoned. The Commissioners holding, for the benefit of science and art, the gardens of the value, according to present prices, of more than a million of pounds sterling, have thought it consistent with their public trust to allow the lease to be virtually forfeited for many years by non-payment of rent; to allow the gardens and buildings to be neglected, to keep the public out of the use of the ground, and to become guarantors for the debts of the Society; but it is to be hoped that they will not delay the inevitable crisis by recanting their objections to a "rink." It has been demonstrated that the lease to the Horticultural Society is unworkable and a failure, and it appears to be the duty of the Commissioners to awaken to a perception of this fact, and rouse themselves to a sense of the responsibility that they hold the ground at Kensington as public trustees, bound to administer it for the benefit of science and art, or, if unable to do so, to surrender it to the public.

A correspondent of the "Pall Mall Gazette," writing on the same subject, says:—The Commissioners of the Exhibition of 1851 are the owners of the large and valuable piece of ground at present leased to the Royal Horticultural Society. The land was bought out of the surplus profits of the first International Exhibition; and as the money was contributed by the visitors to the Exhibition, who cannot be identified and have left no representatives, it must now be considered as in the nature of public property. It was supposed that the encouragement of the science of horticulture came sufficiently within the objects to which public property might fairly be applied; and in this belief the Commissioners leased the land to the Royal Horticultural Society at a rent which, estimated by the present value of the site, must be called nominal. For some years this rent has become nominal in another sense, inasmuch as it has not been paid. It is notorious that from the standpoint of scientific horticulture the Society is a failure. The gardens have latterly been maintained for the benefit of the residents in Queen's Gate, Prince's Gardens, and Cromwell Road, with the interposition of occasional flower shows, which were useful partly as bringing in a little money, and partly as helping to drape the unpleasant fact that the Society was doing next to nothing to promote the object for which it professedly exists. Last year the Society became so nearly insolvent that it could not pay the prizes for which it had invited competition; and the result was that at one of its flower shows there were as good as no exhibitors. The cause of this catastrophe is not far to seek. The Society appeals to two classes of persons—horticulturists, for whom it does nothing; and the residents in the streets immediately round the gardens, for whom, considering what they pay, it does a great deal too much. In the administration of the Society the interests of the former class have been sacrificed to those of the latter; and the consequence is that horticulturists generally have grown indifferent to the Society's misfortunes, while the residents in South Kensington, though far from indifferent to them, are not at all disposed to put their hands in their pockets to better them. It must be remembered, however, that if this section of the Society's fellows were prepared to pay ten or twenty guineas a year instead of four guineas, and if by this means the Society could be set on a sound footing financially, the matter would not be ended. The Commissioners of the Exhibition are a public body, holding land bought by what is in effect public money in trust for public uses. They have no right to let public land at a nominal rent to a few wealthy families who want a quiet lounge for themselves on Sundays and a safe playground for their children on week days. The ground was originally let to the Society in its supposed character as a promoter of horticulture. That element in it has all along been choked by the residential element, and would probably be entirely banished by its further development. Yet a further development of the residential element is the Society's only chance of getting once more on its legs. So that the Society finds itself confronted by its dilemma: The only way in which its income can be raised so as to pay even the present nominal rent is by making the gardens more attractive to, and by consequence more entirely the possession of, the occupiers of a few houses in a fashionable district; while in proportion as this object is attained so it becomes more obviously the duty of the Commissioners to whom the land belongs either to give the Society notice to quit or to insist upon the rent which shall fairly represent the real value of the land leased to them. The writer of the letter in the "Times" estimates that the ground held by the Society is now worth more than £1,000,000, and supposing that to be within the mark, we put it at half this sum, it is plain that a rent of £5000, which we believe is what the Society is under a consistently broken agreement to pay, falls very far short of the real value. If the occupiers of the houses round the gardens like to call themselves the Royal Horticultural Society, and are willing to pay the Commissioners a fair rent for the land they wish to have the use of, we do not know that there would be any objection to the granting of a new lease. The ground would no longer be let below its value for the promotion of an imaginary horticulture, and the Commissioners would draw from it a large yearly income which they might apply to the purposes of their trust. The only thing that is clear is that they ought not any longer to be parties to a gross misuse of public property. A body of Commissioners charged with the duty of administering an estate in the interests of science and art has no right to leave the land in the occupation of a Society which has virtually ceased to have any scientific or artistic character, and has for years been unable to pay even the nominal rent demanded of it. Why should the inhabitants of two or three terraces in South Kensington have any special claim on the Commissioners' bounty? The inhabitants of every London square contrive to maintain gardens for the use of their nurseries without help from the public; and if the residents in Queen's Gate cannot be content with having Hyde Park and Kensington Gardens close to their doors, they must pay for what they want in addition, just like other people. That they should be charged a fair rent for the gardens is not the best arrangements that could be made, but it is at all events free from the glaring faults of the present arrangement. It would be better still, however, if the land itself, and not merely the money derived from letting it, were restored to the public. It might very well be turned to account in providing a site for some of the great national collections which are constantly tending to outgrow the confined space at present allotted to them; or by the sale of a small portion the Commissioners would be able to raise funds sufficient to maintain the rest as a botanic garden to which students should have free admission. As an adjunct to Kew, the ground would probably do more good to science in a fortnight than, in the possession of the Horticultural Society, it has done in fourteen years. At all events, public land supposed to be worth a million or even half a million of money ought not to be wasted as it now is; and if the Commissioners do not act with promptitude and decision, their lagging steps should be quickened by parliamentary interference.

BERRY-BEARING AUCUBAS.

I have a row of Aucubas, 45 ft. in length, the plants in which are 5 ft. in height; in the centre is a male Aucuba, by means of which the whole of the plants in the row are beautifully set with berries without having recourse to artificial fertilisation—a fact which shows how readily Aucubas produce berries through a natural distribution of the pollen: some of the berries are now colouring. From these plants I have raised different batches of seedlings, the first of which are now from 2 to 3 ft. high, and are bearing berries freely. Fully 80 per cent. of the seedlings have green foliage; the male plants are easily distinguished by the points of the flowering shoots being much larger than those of the female plants. I allow the berries to remain on the plants as long as possible; they drop freely towards the end of May, when I gather them, and in a short time afterwards sow them in a seed-pan, and place them on a shelf in the stove, where they soon germinate and make good plants, about 3 in. high, the same season. In the following spring I pot them off into 3-in. pots, and plunge them out-of-doors. John Garland.

Killerton, Exeter.

Allow me to add a few words to my former communication on berry-bearing Aucubas (see p. 117). I there stated that a small male Aucuba (some 8 or 10 in. high) had fertilised half-a-dozen female plants at various distances apart in a small garden. I now find that the pollen must have found its way into an adjoining plot, which is separated from the other by a high, closely boarded fence, as a female plant on the opposite side of the fence is now sprinkled all over with berries. This plant is between 30 and 40 ft. distant from the place where the male plant stands. G. G.

Notts.

Gardening in a natural way does not seem to suit some people; they must have elevated boxes, grafting, budding, and many other systems strictly artificial of inducing the Aucuba to bear berries. Has no one ever considered at how small an expense male Aucubas may be procured and planted amongst female plants? The male Aucuba cannot be too much planted, particularly where there is, as in most places, a redundancy of the opposite sex. The first time I ever saw pots elevated was at St. Cloud, where the superintendent of the Imperial gardens showed me a house where he adopted this plan, in order to put berries on his Aucubas. It is not, however, the best plan, although I tried it five years ago in the open air and with satisfactory results. I have also tried budding, but to very little purpose, comparatively speaking. Any one who will buy male plants will be delighted with the results next year. With the green kind (A. viridis) I have succeeded best.—W. Melles, *Camden Road.* [Mr. Geo. Paul, to whom we are indebted for this note, says, "I never saw Aucubas more loaded with berries than Mr. Melles's. They range from 6 ft. to 8 ft. in height, and as much through, and when the fruit is ripe must be strikingly effective."]

The Ochra as a Fibre.—This plant, though indigenous to the West Indies, has long been naturalised in India. Its pods produce the common vegetable known as Ochra by the English, Gomto by the French, Chimtomto by the Spanish, and Benditeai in India, where it is so much esteemed for its mucilaginous thickening for soups. The pods are gathered green and pickled like Capers. The seeds may be boiled like Barley, and the mucilaginous matter they contain is both a demulcent and emollient. They have also been recommended when roasted as a substitute for Coffee. A patent has now been taken out in France for making paper from the fibre, and for this purpose it is to be introduced into Algeria. The fibre is prepared solely by mechanical means in a current of water, without any bleaching agent, and the pulp, washed and bleached, is reported to make a strong, handsome paper, equalling that from pure rags. It is called banda paper.

NOTES OF THE WEEK.

—— A bush of Aucuba japonica, measuring 60 ft. in circumference and 12 ft. in height, and literally covered with scarlet berries, now forms a most beautiful object in the gardens at Marlfield, near Clonmel, County Tipperary, the residence of Mr. and the Honourable Mrs. Bagwell, and is the admiration of every one who sees it.

—— One of the best cooking Apples now in Covent Garden is Lucombe's Seedling. It is also known in the Apple market as the Mushroom Apple and Yorkshire Greening. It is sent to the London market from Kentish orchards, and it was originally raised in Lucombe & Pince's nursery at Exeter.

—— It may be useful to some of our readers having much foreign correspondence to know that letters and documents in all languages are translated into English or *vice versâ* at the Universal Translations Institute, 59, Mark Lane, London, the proprietor of which, Mr. Ernest Bergman, is the son of Mr. F. Bergman, the well-known superintendent of Baron Rothschild's beautiful gardens and estate at Ferrières. This Institute was established in 1868, and efficiently meets a public want.

—— The new street from Trafalgar Square to the Thames Embankment will now be opened in a few weeks. It is to be planted on either side with trees, like the Embankment itself. Meanwhile the Board of Works is pushing on with a new thoroughfare connecting the east of London with the west, and extending from Bethnal Green to Bayswater. It will sweep away a good many of the worst of the metropolitan rookeries, and as it is to be several miles in length, the cost of its construction is likely to be very considerable. It is to be hoped that the opportunities for tree-planting thus offered will be wisely taken advantage of. It is also greatly to be desired that the Board would encourage the planting of the proper trees in the many open roads and streets now bare of them. Mr. Meston, or whoever has charge of the planting, will, we trust, give us some variety in the trees; "always Plane" is better than always bricks, but far from being the best course even with our present knowledge of the trees that grow in cities and the injurious atmospheres therein.

—— Mr. S. Hibberd lectured at the Society of Arts last Wednesday evening, on the pruning and management of fruit trees. The lecture, which had the merits of clearness and vigour of exposition, was a denunciation of pruning, and a plea for leaving the trees to Nature. No doubt much harm has been wrought by overpruning of diminutive trees, but the lecturer was fighting against facts, common sense, and the best practice, in going too much the other way. It is demonstrable that all the finest fruits in every fruit market in Europe and North America are from carefully pruned trees. The difference between the rubbish of the neglected orchard that is not worth sending to market, or which, if sent there, fails to pay for being gathered, and the finest fruit which brings an abundant return to the grower and all concerned in its production, is mainly caused by the neglect of judicious pruning. But judicious pruning is not mutilation, and if Mr. Hibberd had confined himself to denouncing that, nobody could object. The lecturer also spoke against dwarfing stocks, which are, notwithstanding, the greatest improvements ever introduced into our hardy fruit culture! A few years more will probably show this to everybody interested in the matter; what the French Paradise may do, not merely for the amateur but for the large grower for market, has been already proved in this country. Mr. Dancer, of Little Sutton, who is probably the most successful of London market fruit growers, has already over 400 of Cox's Orange Pippin alone on it, and they have already borne the finest fruit freely; and the other dwarfing stocks have each peculiar merits, not the least of which is the great gain in time. This is so marked in the case of the French Paradise that little trees in Messrs. Veitch's nursery at Fulham were last autumn laden with fine fruit. This, indeed, was so plentiful that the crop would equal that often gathered from large trees occupying the same space.

—— In a small cheap pamphlet on "The Potato Disease, by a Resident of Kent," we find the following recommendations as to its culture:—Have the land clean and in good condition from having well manured it for other crops; select two or three varieties of the early ripening sorts suitable to your soil and taste, for early and late consumption; plant in February or March—the plants will not be so liable to be injured by spring frosts on this plan, being longer in coming through the ground—according to the dryness of the ground, whole sets if possible (before the first shoots have pushed forth), about the size of a large hen's egg, 3 or 4 inches deep; cover them over to about a foot in height from the set, and do nothing more to them till they are ripe, except carefully hoeing or pulling out any weeds that may grow among them; when the haulm is quite dead, take the Potatoes up on a fine day and store them.

Giving Air in Forcing Houses.—Mr. W. Taylor has some pertinent remarks on this subject in the "Journal of Horticulture." "I will pass over," he says, "the question of high night temperature kept by artificial means, as I have reason to believe that is nearly a thing of the past. But what about giving air in the morning? Is it never given too late or too abundantly? Imagine a house with a temperature of 70° while the air outside is frosty. Fill the house with tobacco smoke and watch how very rapidly it all escapes through the smallest apertures. The air, I imagine, of the house changes in nearly as short a time as it takes the smoke to escape, and of course would change just as rapidly if there were no smoke there, the smoke only making the movement of the air visible. The greater the difference between internal and external temperatures the more rapidly will the air change in the house, and therefore the openings for ventilation ought to be regulated according to such difference. People are too much afraid of letting the sun help them to do their forcing; they neutralise its good effects by letting in a rush of cold air. We are getting better in this respect, but there is still room for much improvement. There must be more Nature-forcing; the more light the more heat and moisture should there be. Many people would be surprised at the amount of heat some plants will flourish in when they have sufficient sunlight and moisture, if they have not previously been drawn out too much with fire-heat during dull weather. Very often, instead of giving air on every favourable occasion as the old calendars recommend, it is better policy to shut up as close as possible when the sun shines in winter and early spring. This kind of forcing, however, requires more care and judgment than the old-fashioned way, but, at the same time, when properly done it is much more successful and far more economical. All the air a house is likely to require during any part of the day ought to be given before the sun has shown on that house half-an-hour, and before the thermometer has risen 5°, a little the instant touches it, a little more in a few minutes when the mercury is inclined to rise, and so on by degrees, till as much is given as former experience has taught to be necessary. I would much rather a man under my command remained in bed all day than that he should commence giving air after the sun has been shining on a house half-an-hour."

Plumbago capensis for Autumn and Winter Flowering.—Where large quantities of flowers are required in autumn and early in winter, this plant, says Mr. Henderson, of Thoresby, in the "Florist," from the distinct colour of its blossoms, and the easy way in which it can be had in great beauty, should be grown largely. In March put in a quantity of cuttings, which will root freely in a frame amongst ordinary cuttings. When well rooted, pot off singly into small pots, using rather a free compost, and re-placing them in a close, warm frame or pit, until they have taken root, when they ought to be removed to a house where the temperature ranges about 45° at night, with a rise during the day; as spring advances they will stand in a cold frame (say all May), keeping frost from them, and never letting them suffer either from want of water or of pot-room. When all danger from frost is past. select a good piece of ground, sheltered from rough winds. but fully exposed to the sun, and plant them out of their pots 18 in. apart. Here they will require little or no attention until near the end of September, except an occasional pinching, and if dry weather sets in, a few copious waterings. They should then be lifted carefully and potted into as small pots as the roots can be got into, watering them well, and standing them in a cold frame, kept close and shaded, if bright sun occurs, for about ten days, giving them an occasional sprinkle overhead with the syringe in the morning. If these plants be put into a gentle heat they will soon open their blooms, when, by transferring them to the greenhouse, they will be found very ornamental.

Suckers on Peach Tree Roots.—In pointing over a Peach-border a few days ago I came across numbers of suckers. I carefully removed the soil, and cut them clean out as close to the root as I could without injuring the latter. Perhaps some of your readers, who have had experience in this matter, will kindly explain whether suckers affect the bearing properties or not of the tree. I am inclined to think that one of the causes of so many suckers appearing is the fact, that as soon as they are seen they are constantly removed. In the operation the roots get bruised, partial stoppage in the flow of the sap occurs, and, as a consequence, buds are produced which otherwise would have remained dormant. These, I think, must deprive the tree of a good deal of nourishment which can ill be spared.—Rex.

Hardy Climbers with Fine Foliage (Lady W.).—Ampelopsis Veitchii, A. hederacea, Aristolochia Sipho, Hedera algeriensis, canariensis, palmata, and himalaica. There is a very elegant kind of Cissus at Messrs. Veitch's not yet sent out which has finely-cut leaves, and would be precious for such a purpose as you describe. Lardizabala biternata is well suited for a wall, and has distinct and very ornamental foliage.

THE INDOOR GARDEN.

CELOSIAS FOR WINTER BLOOMING.

During the dull days of autumn and the yet more sombre winter season few plants are more striking than Celosias. For late blooming the seed should be sown in August, in light soil, and covered but slightly as the seeds are small; after sowing, place the pots or pans, as the case may be, in heat, and as soon as the plants are up raise them near the glass, as future success largely depends on a sturdy habit induced during the first stage of growth. Pot off as soon as the seedlings are large enough to handle, and plunge the pots in a bottom-heat of 60° or so, still keeping the plants near the glass. Under such treatment they will grow fast, and the pots will soon become full of roots, when successive shifts should be given until a 6 or 8-in. pot is reached. These sizes, unless very large plants be required for lofty conservatories, will be sufficient. Properly managed and well fed with manure, a 6-in. pot will be large enough for a Celosia a yard high and almost as much through. Large plants, however, are not by any means the best or most useful for winter decoration. Well-grown pyramids, about 2 ft. high in 6-in. pots, are much more serviceable, as they will stand on a shelf in any out-of-the-way part of the stove, and yield quantities of blossom which will prove useful in a cut state. After their final shift, Celosias should gradually be removed from a hot to a more temperate climate; a warm light greenhouse or conservatory is about the best situation for them. The final shift should be into rich soil, composed of turfy loam and leaf-mould, with a free admixture of sand. For summer decoration Celosias may have a much richer soil, say half of loam and half of rich manure. But less stimulating food is better for such as have to pass through the winter. The chief enemies of Celosias are thrips and red spider, both of which dislike moisture, in which Celosias delight while growing. Hence, if the plants be shaded and frequently syringed, such pests are seldom troublesome. Should they, however, gain a footing, fumigate twice at least in succession with Tobacco-paper, and, in fact, continue fumigating until they are eradicated. The pyramidal flower-spikes of Celosias have almost driven the old Cockscombs out of cultivation, and deservedly so; for though not without interest, they required a good deal of skill and care to grow them well, and they refused to group effectively with other plants. The crimson comb might be large and striking enough, but it never could be made anything else than stiff and formal, whereas these new Cockscombs, or Celosias, group well with all kinds of plants, and are among the most useful of any for cutting for vases or bouquets. Celosias in groups by themselves are very showy, and they have a still richer effect when mixed with such strikingly beautiful foliaged plants as Amarantus Henderi, A. salicifolius, and A. tricolor. Of these feathered Celosias there are a great many varieties, ranging through the different shades of colours from lilac to crimson and from yellow to orange. Almost each grower has his own specially good strain, distinguished either by its superiority of vivid colouring, size, or profusion of bloom. Among the finer named sorts are the following:—C. pyramidalis aurea, golden; C. p. ignea, crimson; C. p. aurantiaca, orange; C. p. plumosa aurantiaca, variously coloured. One and all of these produce feathery-looking flowers of great richness and beauty. Indeed, few plants are more striking or more useful in the stove during the winter season, or more highly ornamental in pots in the conservatory throughout the autumnal months than these pyramidal Cockscombs.

F.

Pyramidal Cockscomb (Celosia pyramidalis).

NOTES ON ORCHIDS BY A TEA-PLANTER.

Since I began cultivating Tea in Cachar, writes a correspondent in "The Gardener," I have noticed some very fine Orchids, such as Dendrobiums of different kinds, Vanda teres, Cœlogynes, Cymbidiums, Saccolabiums, and Aërides, the latter by the hundred, especially A. odoratum and A. o. roseum, and the observations I have made in reference to these lead me to think that the majority of East Indian Orchids at home are grown in too hot a temperature, especially in winter. If I had again to deal with Orchids in Great Britain, I would make my minimum in winter from 40° to 45° at night, and allow it to go up to 80° during the daytime, but only with sun-heat. After February the night temperature could be raised to 50°, that is to say, if the plants showed signs of starting. Here mostly all the Orchids flower during March, April, and May, and up to the latter month they do not make any leaves, owing to the want of moisture. The rains begin in June, and from then till the middle of September the plants are never dry, but in a soaking wet state; during this period they make their growths. The leaves on Aërides, Vanda teres, and others, are short and glossy, the plant short-jointed, and every leaf like a piece of lath as regards stiffness—a circumstance which I attribute to their having a good long rest, and also a low temperature when in that condition, during which time they are as dry as a bone. When they are well started into growth, water should be literally poured into them, and they should be kept in a steaming heat, but their drainage should be efficient. As regards soil, I would recommend good loam with rough charcoal mixed with it for all terrestrial Orchids. As respects those which are generally placed on blocks or in baskets, it cannot be denied that their natural habitat is on the trunks and branches of trees; but, at the same time, such situations are not those in which they flourish best. In April, 1873, I planted a large Vanda teres in the soil, at the root of a Cotton tree. This I did as an experiment, expecting to see it die. I put it 1 ft. into the soil, and trained its top to the tree. I paid little or no attention to it until about the following May (1874), when I went to see if it were still alive, and, to my surprise, I found nearly eighty spikes of bloom on it, and dozens of air-roots issuing from the plant about 1 ft. above the ground, creeping downwards and entering the soil instead of laying hold of the tree. I shortly afterwards earthed it up with loam about 18 in., and last May (1875) the bloom on it was really magnificent, and the plant is now in luxuriant health. Since May, 1874, I have planted Dendrobiums in soil alone, and they are thriving splendidly. For Dendrobiums I would advocate mixing the Sphagnum Moss with charcoal and round lumps of fibry loam, and especially let good drainage be provided. The quickest method I have tried for fixing Orchids to posts is to spread a layer of cow-manure round the post, cover it with a piece of old blanket, and then tie the plant firmly on it.

RAISING FLORISTS' FLOWERS FROM SEED.

The first essential point is to secure seed saved from the finest flowers of the finest kinds, the chances of success being vastly greater from a few plants raised from seed of the finest quality than from a large quantity raised from seed of an inferior description. It is from seed only that new varieties are raised, and this can be done as successfully by the inexperienced amateur as the professional cultivator—in fact, many, if not most, of the finest florists' flowers now in cultivation have been raised by amateurs.

Antirrhinums.—Seeds of these should be sown in February in a cool frame or under a hand-light, and from March to August in the open air. Sow thinly, and, as soon as the plants are strong enough, transfer them to beds or borders as required. This useful perennial blooms the first season if sown early, and produces a great variety from seed.

Auriculas.—These should be sown from February to the end of April in well-drained pots or pans. Use a compost of about two parts loam and one part leaf-soil. Cover the seeds very slightly, and place them in a cool pit or under a hand-light in a shady situation—a north or east window will answer the purpose. As soon as the plants are large enough to handle, pot them off into small pots, and keep them under glass in a shady situation, giving plenty of air. When these pots have become filled with roots, finally pot off for flowering into 5-in. pots, with the addition of a small quantity of well-decayed cow-manure to the soil. Auricula seed may also be sown in a shady situation in the open ground during summer, and kept well watered until the plants are up.

Calceolarias.—Seeds of these should be sown in July and August in well-drained pots or seed-pans; cover the drainage with rough, fibrous loam, and fill up to the surface with fine, light, sifted mould and silver sand; water with a fine-rose water-pot, after which sow the seed, placing a piece of glass over the pot to retain the moisture, no covering of soil being required. Place the pots in a cold frame or under a hand-light, taking care to shade from the sun. Remove the piece of glass as soon as the plants are up, and when large enough to handle, prick them off 1 in. apart into pots or pans made up as before; place them in a somewhat close situation, and when of sufficient size, pot them off singly, and treat them as recommended for tender annuals.

Carnations, Picotees, and Pinks.—These may be easily raised by sowing thinly from the early part of May to the end of July, in shallow drills in the open air in a somewhat shady situation; keep them well watered until the plants are up. Plant them out n autumn where they are intended to flower, 1 ft. or 18 in. apart.

Cinerarias.—When required for early spring flowering, these should be sown in July and August, and for autumn and winter decoration in March, April, and May, in pots and pans. The seed should have out a slight covering of soil. Place the pots in a cold frame or under a hand-light. Shade from sunshine. Pot off when the seedlings are large enough, and treat them as tender annuals. They may also be successfully raised in June, July, and August, sown under a hand-light, or in a moist, shady situation in the open air, taking care to pot them up in September, and to remove them to a place secure from frost.

Chrysanthemums.—Both large-flowered and pompone kinds when raised early will bloom the first season. Sow in March in a slight bottom-heat, or in April, May, and June in a shady situation in the open air. Prick out on nursery beds when the seedlings are about an inch high, and when strong enough plant them out where they are intended to flower. Chrysanthemums like a warm, sunny situation, and an abundance of moisture.

Dahlias.—Sow from March to April in pots or pans on a slight bottom-heat, and when the young plants are about 2 in. high, pot them off singly into small pots, and place them in a cool frame or under a hand-light, gradually hardening them off till the end of May, when they may be transferred to the open air, giving them a slight protection for a few nights, if the weather be cold. Thus treated, Dahlias will bloom the first year from seed.

Fuchsias.—These should be sown from February to May in pots on a gentle bottom-heat. When about 2 in. high pot them off into small pots, shifting them into larger-sized ones as these become filled with roots; treat them afterwards as ordinary pot plants.

Geraniums.—Gold and silver tricolor, bronze, and zonal kinds, should be sown in February or March in well-drained pots, pans, or boxes, and placed in a gentle heat. These, when grown freely, will bloom the first year; but they may be easily and successfully raised in pots in sunny windows, or in a cool frame without bottom-heat, any time from April to the end of August; pot off singly into small pots when the plants have pushed a second or third leaf, and, in order to induce sturdy, compact growth, place them in a position where they will obtain all the air and sunlight possible. It may be observed that seed from the most carefully hybridised flowers will not produce a large per-centage of variegated seedlings, and that the beautiful variegations for which the gold and silver tricolor varieties are celebrated are not always shown by the plants in a young state, but are frequently produced by sports, breaks, or side-shoots, which are removed and struck as ordinary cuttings any time during the summer.

Hollyhocks.—These should be sown thinly in seed-pans in February and March, under glass, or in shallow drills in the open air from April to July. Select a shady situation, keep the young plants free from weeds, and plant them out in autumn or early spring in clumps, beds, or rows.

Pansies and Polyanthuses.—These should be sown from March to August in shallow drills in the open air, selecting a moist, shady situation for them. Plant them out as soon as large enough to handle, 9 in. apart in beds. Pansies sown in March will bloom the following autumn; those sown in August, the following May.

Primulas.—These should be sown in March, April, May, June, and July. Great care must be taken to have a well-drained pot or seed-pan filled to within ½ inch of the top with sifted leaf-mould; leave the surface rather rough, and sprinkle the seeds thinly upon it. The most successful raisers do not cover with soil, but place a square of ground white-washed glass over the pot. Place them in a warm house or hot-bed; and, when the soil becomes dry, water them very gently. The seed will germinate in two or three weeks, after which remove the glass and keep them in a shady place. Pot off into small pots when the plants are ½ inch aboveground, and place them near the glass in a frame, greenhouse, or window.

Verbenas.—Sow these in February or March in pots, and place in a pit or frame on a slight bottom-heat, or in April and May in a warm, sunny window. Pot them off singly into small pots when about 1 in. high, and plant them out the second week in May, in beds or borders where they are intended to flower.

Norwich. G. Daniels.

Rhododendron argenteum.—M. Ambrose Balfe informs us that specimens of a fine variety of this Rhododendron are now in bloom in the Royal Botanic Gardens, Glasnevin. In its native country R. argenteum forms quite a tree 30 ft. in height or more, and bears gorgeous flower-heads, which are very large, as are also the individual flowers. The head, in fact, consists of several tiers of flowers, each resting horizontally on the one below. The flowers are pink in the bud state, but as they expand become white. Each flower shows at the bottom of the great open tube a rich dark purple spot encircling the base of the stamens; this is very conspicuous by reason of the way in which the flowers present themselves to a front view. The clusters of anthers with their purple stamens add much also to the effect; but of all the floral organs the stigma is the most striking on account of its great size and bright rosy-carmine colour. There are, moreover, several other choice Indian Rhododendrons in flower at Glasnevin just now, and among them one which, as regards symmetrical compact heads and fiery brilliancy of colour, has no equal, namely, R. barbatum.

Want of Chlorophyl in Variegated Seedlings.—Mr. Gumbleton's note on this subject (see p. 116) is very interesting, and since want of chlorophyl or deficient root-action (or both combined, inasmuch as each depends on the other) is the cause of death, it has occurred to me that grafting or inarching might often, in such cases, be resorted to with success. A clever manipulator, with a sharp knife and a few strands of soft cotton, might inarch a green or partially green seedling on the yellow ones, more especially if a green spot can be found on the stem of the seedling which shows too great a predominance of yellow. In less extreme cases, that is, where there is rather more chlorophyl, the young seedling might be grafted on a young cutting or branch of an old plant as a stock. This might be practicable in the case of variegated Acers, Pelargoniums, Aralias, &c., but of course not in that of endogenous plants like Phormium. It does not appear to be sufficiently known that many plants are more easily grafted when very young, that is, when all their tissues are in a soft or cellular condition, than at any other time. Major Trevor Clarke succeeded in grafting a seedling Cotton below the seed-leaf on to an older plant as a stock; and it was at one time a common practice among Italian gardeners to inarch two or three seedling Oranges together and afterwards to sell the plants in pots as curiosities; indeed, the Trifacial Orange is said to have originated in this way, but of this we have no proof. Whether inarching or grafting be useful or not in the case of variegated seedlings which are deficient in chlorophyl, or, in other words, wanting in health and vigour, the fact remains that young growing tissues are the only ones which unite properly in grafting; hence it follows that a perfect union by grafting can only be obtained when both scion and stock are in a cellular condition, that is, while the cells are growing and before the vascular tissues begin to harden.—B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Single Hyacinths Best for Forcing.—It is worth reminding beginners that single Hyacinths only should be forced early—double ones do no good. We have had fine plants of single ones since Christmas.—Chef.

Wintering Alternantheras.—During two years these died off with me in winter—a loss to check which I tried a variety of means, but none so effectual as the one I have tried this season. When I took them out of the beds last October, I put them thickly together in the bed of my Cucumber-house. Here they have kept splendidly, and to-day (Feb. 7) I am tearing them to pieces and putting in the cuttings.—P.

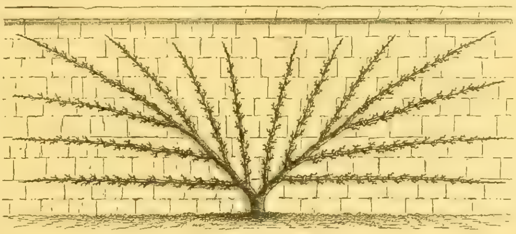
Speedy Way of Striking Cuttings.—I saw in a neighbouring nursery the other day a mode of propagating soft-wooded bedding plants, such as Verbenas and Lobelias, which might be usefully followed. All along the pipes employed for top-heat, by the side of the central pathway, were placed zinc pans, 2½ in. deep, and from 6 to 7 in. wide; these were filled with 2 in. of silver sand, kept wet through. In this were inserted the cuttings, which, under such conditions, are said to strike root with great rapidity.—N. H. P.

THE FRUIT GARDEN.

GRAPES IN GREENHOUSES.

By paying attention to a few common-place particulars, Grapes may be cultivated in greenhouses with a very fair amount of success. The aspect of the house is not of great importance so long as the principal exposure is not direct north. Supposing a span-roofed house to run north and south, the best side on which to plant the Vines would be the east. In houses in which plants are grown in the centre, it is not advisable to plant Vines on both sides of them, and by planting them on the side least exposed to the sun, their shade has no weakening influence on the plants. The main rafters in small houses are generally 6 or 7 ft. apart, and on each of these one Vine should be planted. Three wires should be fixed for the support of each Vine. The centre one should run up underneath the rafter, and the other two should be fixed one on each side a foot distant from the centre one. An arrangement of this kind leaves 4 ft. of vacant or uncovered space between each Vine. The wires should be placed 15 in. from the glass, a distance at which they may be secured by means of a three-armed support screwed into the wood. There should never be more than one leading cane taken from the root, and this should be trained to the centre wire. As the side-shoots grow they should be carefully tied to the side wires, and attention must be paid to the stopping of the shoots. as on this depends, in a great measure, the success of the undertaking. Each shoot should be stopped, and not allowed to grow another inch further than one leaf beyond the bunch. On short-jointed wood the fruit will generally be produced from 6 to 9 in. from the main rod, and by restricting the shoots as just directed, the leaves and young wood will not extend much beyond the outside wire. In the case of young Vines there should be no hurry in getting them to the top of the house. The first matter requiring attention is the border, and for this I will not say that so many cart-loads of the best turfy loam are absolutely indispensable—as hundreds who grow, or might grow, Grapes in greenhouses have no great choice of soil—but, if it could be got, all the better. Many fairly good Grapes are, however, grown in common garden soil, and often in no prepared border whatever. Underneath the side shelves is where the Vines are generally planted, and there the earth should be taken out to the depth of 3½ ft. The opening thus made should be at least as broad as it is deep, and if it can be made wider so much the better; but about many small houses there is not space enough to admit of making a large border. In preparing material in which to plant the Vines, a quantity of the best soil obtainable should be procured. If nothing else can be had, use that in which ordinary kitchen garden crops have been grown, adding to it parings of Grass verges, road-scrapings in which there are horse-droppings, plaster rubbish, and bones broken small. These should all be well mixed together. 6 in. of rough stones or bricks should be placed at the bottom of the border for drainage, and over that the soil removed. The mixture just adverted to should then be put moderately firm above this, and the whole should be allowed to settle for a week or two before planting the Vines. The next thing to be considered is what varieties should be planted—not at all a difficult problem to solve. Amongst black kinds the Black Hamburgh should be invariably preferred, inasmuch as there is no other that succeeds in a cool house, and, under ordinary treatment, so well. It is a free grower, sure bearer, and its fruit, unless under very exceptional circumstances, is always well flavoured. From among white varieties select Royal Muscadine or Chasselas de Fontainebleau of the French, a kind which seldom fails where the Hamburgh succeeds, and it is a kind that is easily grown. Its fruit is somewhat small, but its flavour is good; and there is no certainty that such kinds as Muscats will succeed in a greenhouse. Neither should late varieties be grown in such a place. The fruit of these does tolerably well while it is young, but it fails as it approaches maturity; a remark that applies to such sorts as Lady Downes, Black Alicante, and Gros Colman. With only two kinds there is certainly little variety, but it is better to grow two sorts well than a great many indifferently. Well-ripened canes should be selected for planting, for, where such are chosen, they start into growth under the every-day conditions of the house: and the growth, made under such circumstances, gets hardened as it proceeds; whereas a Vine that has been brought into leaf in strong heat, and planted in a greenhouse, would have to overcome a double check in the shift and change of temperature to which it would be subjected. About the beginning of March is a very suitable time to plant, using Vines raised from eyes, and grown into well-ripened canes the previous season. The loose soil should be shaken from their roots, and those which have grown in a circular direction should be uncoiled. In planting, make a hole large enough to accommodate the roots comfortably; and the soil should be laid over each root with the hand until all are covered, when the surface may be trodden down and dressed up with a spade, watering well with tepid water. There will be little signs of growth until after they have been planted two or three weeks, and no extra heat should be applied in order to induce them to start quickly. When the buds are bursting, the ventilators may be partially closed on cold nights, but a cool temperature and short-jointed wood are better than a warm one and feeble growth. If the canes are —say 6 or 7 ft. in length—they should be cut back when planted to 2 ft. from the bottom, and only three of the buds left should be allowed to grow, each shoot produced by them having a wire to itself. These may be allowed to grow to the top of the house. When pruned in autumn the two side-rods should be cut away, and the centre one alone retained with 2 or 3 ft. more of young wood than it started with at the beginning of the season. This young wood left will throw out several side-shoots when started the following season. Two bunches may be allowed to remain on the strongest side-shoots, none of which should extend beyond the side-wires or one leaf beyond the bunch. The leading rod and crop may be increased annually at the same rate until the top of the house is reached. During the growing season the roots should never be allowed to get dry, and heavy cropping must be avoided at all times. Insects may be troublesome sometimes in summer, but they are generally not so plentiful in a cool as a hot house. Occasional syringings will keep down red spider and thrips, and mealy bug or any other insect must be cleared off when the Vines are pruned.

J. Muir.


A Spur-pruned Peach tree.

Spur-pruned Peach Tree.—The accompanying is an accurate representation of a Peach tree spur-pruned by a skilful Continental fruit grower, who adopted this kind of form. In fact, it is such a tree as one might see in M. Chevalier's garden at Montreuil, and as such is useful in calling attention to a system very different from the one we pursue in this country in the case of the Peach tree. The spurs are cut in rather closely every spring, and the whole tree kept perfectly under control. Excellent crops of fruit are borne by trees trained in this manner; it is probable, however, that the fan-trained system common in England is, when the stocks are of the best kind and the training and culture good, on the whole, better than this one. Be this as it may, the perfect control exercised over the tree, the equable furnishing of fruit buds in every part, and the beautiful symmetry of a tree thus managed have an interest for all students of fruit culture.

Selecting Keeping Apples.—It is familiar to most orchardists that some Apples of the same variety in the cellar keep much longer than others. Some of the Baldwins (says the "American Cultivator"), for instance, begin to rot in December, even without having been injured by bruising. Others will remain fresh, solid, and sound until April or May. These different specimens, with all grades between them, are promiscuously mixed together. It is worthy of enquiry whether the long keepers do not come from particular trees, which from soil, culture, age, or other influence, ripen their specimens in such a way as to enable them to resist decay. By keeping the crop from different trees separate, something valuable might be learned in this way. An examination into the causes might possibly enable us to control in some degree the keeping qualities of different sorts.

Renovating Old Apple Trees.—I have just noticed in The Garden (see p. 514, Vol. VIII.), some remarks on this subject. The following account of how I treated some old standard Ribston Pippins—planted by my great grandfather—is at your service. I was urged by some friends to cut down the old trees, which were apparently past bearing. Every year they blossomed freely, but had not strength enough to carry fruit. However, having a vivid recollection of the delicious Apples which they used to yield when I was a boy, I determined to manure them vigorously, and encircled them accordingly, at 12 or 15 ft. from the stem, with manure from the farm-yard near by. I persevered for two or three years till I killed the Grass below them; but, to my delight, I noticed that each year they made longer shoots, and when the new wood thus made became ripe I had sackfuls of beautiful fruit, which, at 30s. a sack, helped to repay me for my trouble. The place to put the manure is just outside the radius of the branches, where the roots are most likely to be able to take it up.—W. H. F.

Old Vines.—Few will be inclined to dispute the soundness of the practice of "W. D. C." regarding the lifting and renovating of Vines, as the comparative loss of crop is small, and the certainty with which they yield their fruit and ripen it, after the plants are re-established, are matters of great importance where means for growing Grapes are limited; and I have often observed that, after the roots have been removed from a cold sub-soil, either underneath the border or at its front, and plenty of new roots have formed near the surface, there was no difficulty in getting the fruit to set freely. It may be observed, that often, in the case of shallow borders formed with extra attention to porosity of soil, that the Vines did well for a few years, and then suffer much from some cause unknown—red spider and shanking; or, it may be, that there was great difficulty in getting the fruit to set and ripen properly. My experience has been, that the very pains frequently taken to ensure success have led to mischief. I need hardly remark that, in very open borders, the roots push their way very rapidly to the extreme limits of the new soil, under which a bed of wet clay may be found by the various feeders: they do not turn back to the good food they have so quickly passed through, but pierce the unkindly soil, where they almost become sealed from the influence of sun and air, and the roots, not being fibry, but like thongs, by the fact of their having received no check in their progress through the open soil, soon fall victims to many evils destructive to plant-life, for which there is no cure except a new addition to the border, or the entire removal of the roots from their unhealthy quarters. Deep open drainage, through which the roots can easily pass to the sub-soil or to the concrete, are evils which do not always receive due consideration when new borders are formed, and if at any time there is an absence of sufficient moisture at the roots, they naturally go downwards in search of what is so essential to their existence. Among many old Vines which I have been successful in renovating was a black Morocco, which was lifted out of cold clay at a place in East Anglia. Though it had borne no fruit but small stoneless berries previously, the raising of the feeders to fresh soil gave results of the most satisfactory character.—M. T.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Select Pears (E. S. W.).—1, Jargonelle; 2, Louise Bonne of Jersey; 3, Thompson's; 4, Beurré Superfin; 5, Beurré Bosc; 6, Doyenné du Comice; 7, Marie Louise; 8, Glou Morceau; 9, Maréchal de la Cour; 10, Beurré Rance; 11, Pitmaston Duchesse; 12, Winter Nelis.

Purple-leaved Nut.—This should have a place in every garden, its leaves being as dark and effective as those of the purple Beech. It may be kept dwarf by cutting the longest shoots back every winter. It should be planted before the leaves start into growth, and it will thrive in any ordinarily good soil, and in the most exposed situation.—J. Muir.

Gloria Mundi Apple.—This is one of the largest of Apples; we had many last season which weighed over 1 lb. each. It does best in the form of espaliers or low bush trees, as the fruit, being so large, is apt to get blown off or bruised on high trees. Its season is from October to January, and it is an excellent culinary Apple.—J. G.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Fuchsias.—Where these were struck early in autumn and kept through the winter in a temperature of about 50° during the night, they will be found to have made the finest plants. When the small pots they were put in after being struck have got moderately filled with roots, they should at once be shifted before they have become stunted, which will most assuredly occur if the roots get matted, the effect of which is fatal to free growth afterwards. They may at this time be transferred to pots 4 in. larger than those they have been kept in through the winter; and the soil ought to consist of four parts of good ordinary loam to one of rotten manure and leaf-mould in equal proportions, to which a good sprinkling of sand should be added, but do not make it too light, as Fuchsias progress most favourably in moderately strong material; for this reason, in potting them ram with the potting lath the new soil, so as to make it quite firm. Keep them for the present in a night temperature similar to that in which they have been during the winter, increasing it during the day as the sun gets more power. Syringe them freely overhead every afternoon; this is necessary to promote growth, and to keep down red spider, to which they are much subject. Stop the shoots so as to keep them bushy, and check a disposition to flower until the plants have attained the size required. Where amateurs have not the convenience of keeping up the temperature necessary for these young plants through the winter, a few of the old plants that flowered during last season, and that were recommended to be pruned back some weeks ago, should now be placed in heat. These old plants will naturally bloom the earliest, and will also furnish cuttings that may be taken off and struck when they have grown to about 2 in. in length. A few young ones should be struck every year to take the place of older plants, which may with advantage be planted later on in the borders out-of-doors. The following is a selection of the best kinds in their respective colours, both old and new:—*Light varieties*—Schiller, Fairest of the Fair, marginata, Annie, alba coccinea, Josephine, Water Nymph, and Star of Light. *Dark varieties*—Wave of Life, Noblesse, Empress of Germany, Inimitable, conspicua, and alpha. *Double white varieties*—Enchantress, Alexandrina, Pursuit, and Mrs. E. Bennett. *Double dark varieties*—Triumphant, Marksman, and Prince Leopold. The light variety, Arabella (syn. with Mrs. Marshall), so much grown for Covent Garden Market, is still one of the very best decorative kinds, flowering very early. The old corallina is yet unsurpassed for clothing a pillar or a wall. Amateurs, who wish to add to their collections of Fuchsias, may select all or any portion of the above, as they produce not only fine individual flowers, but have a free, close habit of growth, forming handsome plants.

Lilies in Pots.—From much that has been written respecting the cultivation of Lilies, amateurs who have hitherto grown their collections in pots may be induced to turn them out into the open borders. I should advise discrimination in this, as it is evident many of the more recently introduced kinds will not succeed nearly so well in the open ground in this country as they will in pots, if, when so grown, the treatment be such as they require. The greatest success that has yet been attained, even with any of the Japanese varieties in the open border is a long way behind that which has been reached by the most successful pot culture. I mention this through knowing the failures that have attended indiscriminate planting out, especially in the north of the kingdom. The soaking they are subject to through the heavy autumn rains which we usually get every season appears to be injurious to the roots—falling, as they do, when the tops are dead or dying. Where the potting was done soon after the tops were decayed, as at the time I urged it should be, and the soil has been kept since in a slightly moist condition, all that is requisite now is to keep them where they will be out of the reach of frost, but where the shoots appearing above the soil will get from the first plenty of light. If allowed to remain in sheds, under greenhouse stages, or in similar out-of-the-way places, until they have made even a few inches of growth, they will be so injured that no subsequent treatment during the season can fully rectify; neither must they be put under the influence of a higher temperature than that of an ordinary greenhouse. Where the potting has been delayed until the present time, and the pots are too small to sustain them through the season, they should at once be removed to others that are larger without breaking the ball or disturbing the roots in the least; in fact, the crocks necessarily used for their drainage must not be shifted if the roots have attached themselves in any way to them. Three-fourths of the failures attending Lilies under pot culture are owing to their roots being disturbed when they are growing. Large masses of such kinds as the different sorts of L. lancifolium, that have not sufficient root-room, and where, nevertheless, it is not deemed desirable to increase the size of pots, should at once have the surface-soil removed, working it out with a pointed stick down to the tops of the bulbs, at the same time taking away and potting separately all the young bulbs that were formed last summer on the base of the stems; this can be done without touching the roots, for all that are living at this time of year will occupy the lower portion of the ball beneath the bulbs; then fill up the pots to within 1½ in. of the top with good loam of a turfy nature, if obtainable, to which add one-fifth of thoroughly rotten manure, such as has been used for hot-beds last season.

Miscellaneous Plants.—Where Solanum capsicastrum and S. pseudo-capsicum are grown from seed, they should at once be sown in heat; if placed where a night temperature of 50° can be kept up it will be sufficient; the seed should be put in pots or ordinary seed-pans in two-thirds loam to one of sand and leaf-mould sifted, covering them with ½-in. of the finest of the soil; they will soon vegetate; when up place them near the glass or they will get drawn, which will prevent their forming bushy plants. When large enough to handle, pot them singly in small pots, from which they can be either moved into others 6 or 7 in. in diameter, or they may be planted out in a sunny border and grown for the summer and afterwards potted; this latter is the best mode of treating them. Where these most useful winter decorative subjects have to be raised from seeds, no time should be lost in sowing them, or they will be late in forming their berries, and, consequently, will not get their wonted colour before winter. The old Humea elegans is not only one of the best plants for relieving the flat surface of the flower garden, but it is a handsome pot plant for the decoration of the greenhouse, the corridor, &c. To have them in good condition, they should not remain too long in the pots they were moved to in the autumn, or the lower leaves are certain to turn yellow and fall off, which completely destroys their appearance; to avoid this, they should at once have more root-room; 10 or 12 in. pots will not be too large, using rich soil and keeping them near the light in a greenhouse temperature, so as not to excite growth, otherwise they will get drawn up weakly. They are very subject to green fly, which, if allowed to get established upon them, will quickly discolour the leaves—a condition which cannot afterwards be rectified.

Vineries.—As I some time since urged, it is not advisable for amateurs who have not had considerable practice with Vines to attempt very early forcing, as with such the chances of failure are increased; but those who happen to have more than one house in which Vines exist will find it most desirable to treat one so as to get the fruit ripe as early in the season as there is a likelihood of success, and to have the second in as late as will permit of their being ripened before the season is too far advanced. With this intention one house should now be started with the night temperature up to 55° at the commencement, giving air in the daytime, and syringing the Vines overhead morning and evening. Such a house will be found very useful for bringing on many other plants. The outside border will be all the better for having 3 or 4 in. of rotten manure spread over it, and on this 8 or 10 in. of stable litter to keep the surface from being frozen. Do not tie the Vines up in their places till the young shoots have shot out an inch or two, or they may not break freely towards the bottom. This is more particularly the case should they be young.

Peaches.—Where Peaches are grown under glass with the aid of fire-heat it will now be advisable to start them, turning on a little heat to raise the temperature up to 50° in the night, giving air in the middle of the day, but closing the lights early in the afternoon; syringe the trees overhead at the same time, but be careful not to have the house at any time too hot. In this it is always well for those who have not had much experience in fruit forcing to err on the right side in not using too much heat, especially at the commencement. See that the soil is sufficiently moist, not merely near the surface, but as low as the roots go; to make sure of this, it is always safe practice to test inside borders at the time the trees are started. This can readily be done by the use of a piece of strong tin or thin iron pipe, something like an ordinary gun-barrel, but open at both ends, and long enough to reach to the bottom of the border; if this be pressed down into the soil it will, of course, when drawn out, come up charged with it; by using a stick that will fit the bore of the pipe the soil can be thrust out almost entire, and its condition as to moisture right down to the bottom will thus easily be seen. By the use of a simple instrument of this kind in different parts of the border there can be no mistake on this most important matter in the cultivation of all kinds of fruits, but especially the Peach, to which a dry condition of the roots is more injurious than others.

Greenhouses.

The Zonal Pelargoniums, both single and double, form a very showy and interesting class of plants. For summer decoration they are most valuable, as they come in to succeed the large-leaved and fancy kinds, and continue in beauty till they have to make way for the Chrysanthemums and other autumn-blooming plants. A portion of the old plants that have been wintered in pots should now be shaken out and re-potted, preparatory to starting them into growth. Where size is desired, the shoots should be simply stopped, or only slightly shortened back, as there will be no difficulty in getting them to break if the weak shoots be thinned out. A good stiff fibrous loam, without any admixture whatever, is the best soil to grow them in, as they make much firmer short-jointed wood in this way than they do when a more loose open compost is applied. In potting, re-place them in the same-sized pots, or smaller, if the roots can be got fairly into them, as the plants will be benefited by another shift later on. Pot firmly, so that when finished the soil will not yield to the touch; and, when potted, place them in a good light position on shelves, or as near to the glass as possible, and where they can have a little heat to give them a start. The tops, or young shoots removed in thinning them out, may be made into cuttings, and these will form capital plants for successional blooming, or to stand through the following winter to be grown on again in the spring. A few pots of Mignonette sown now are sure to be useful to come in before it can be got ready in the open air, and to succeed such as are now becoming exhausted from winter blooming. The best way to grow this is to drain freely, using small crocks for this purpose. Over this place a handful or two of rough fibrous loam, in which some soot and well-rotted manure has been mixed up. Fill up the pot as firmly as possible with good yellow loam, and water twenty-four hours or so before sowing the seed, leaving the soil that time to settle and drain. Slightly cover the seed, and give no more water till quite dry again, as the plants go off if the soil become at all wet. Cinerarias, to bloom early next autumn, must be sown at once, and any that have their pots well filled with roots, and showing for bloom, should be assisted with manure-water as often as they become dry. Others, intended for late blooming, must be grown freely on by shifting them into larger pots as often as becomes necessary. They should never at any time be allowed to become pot-bound until they have attained the desired size, or are placed in their flowering pots. The soil for these can scarcely be too rich and open, and at least a third of very mild, thoroughly decomposed manure and leaf-soil may be added to the loam. Pot somewhat loosely, that the roots may be able to penetrate the soil in a free manner. Water liberally, never at any time allowing the plants to become dry, or a stunted growth and discoloured under-leaves will be the result; keep the atmosphere as humid as possible, and syringe freely overhead on the afternoons of fine sunny days, closing the lights at the same time. In arranging these in the greenhouse as they come into bloom, keep them as far from the hot-water pipes or other heating surface as can conveniently be done, as dry heated air of this kind is fatal to their beauty. Lachenalias will now be showing bloom, and a more useful or desirable plant for decorative purposes at this season it is impossible to have. If the pots have a sufficient number of bulbs without being actually crowded, they will form a fine display. To add to their vigour and assist them in developing fine heads of bloom, the pots may be placed in small shallow pans that they may have the benefit of an abundant supply of water at their roots. Keep them close up to the light that the flower-stems may come straight and strong, so as to stand erect without any support, which would be a great disfigurement to them. There is generally so little variety in the greenhouses during the summer and autumn months, that anything to afford some change from the ever-recurring Balsam, Fuchsia, and Pelargonium is sure to be very acceptable. There are now so many good things among hybrid Begonias, that anyone desirous of adding variety is sure to be charmed with their beauty. Such comparatively hardy kinds as Chelsoni, Sedeni, Professor T. Dyer, and a host of others are just at home in the greenhouse, while many similar hybrids succeed well out-of-doors. Seed of these sown at once in gentle heat will make good flowering plants before the season is over, but to make anything of a show, a few bulbs should be purchased and started to grow at once. Another exceedingly useful plant for autumn decoration is the Celosia pyramidalis. Its brilliant feathery plumes, ample foliage, and regular symmetrical habit render it an object of great beauty, while its lasting properties and the pleasing effect it produces when cut and used for dressing among other flowers is unapproachable. To get these fine and of large size they should at once be sown in heat, and, when up, be pricked out in light rich soil, and potted on when of sufficient size for that purpose. The berried Solanums, so useful for winter decoration, should be looked over to have seed saved from the best varieties. This can scarcely be sown too soon as the plants do not attain much size in one season, and therefore all those of a year old, and the best of others, should be kept over for the purpose of cutting back and planting out when the time arrives for so doing. Keep a few of the best of the Cyclamens and Primulas on shelves well up to the light, for the purpose of getting them to seed, and mark any of the former that are at all inferior, only saving such as are distinct and good. By raising a few every year and saving only the best, a good stock of really superior kinds may soon be obtained. Seed of these should be got in now in order to get plants of sufficient size for turning out in May or June, as they grow much faster than when confined to the limited space of a pot.

Camellias.

Any Camellias so thinly set with bloom-buds as not to be deserving of room among the general collection of flowering plants should be removed and looked over with a view to starting them into growth. If the plants be healthy and vigorous, they may, with safety, be thinned out where the shoots have become thick and crowded, so as to cross each other and obstruct the light and air from playing freely through the plant. Camellias are very amenable to the knife, and by a judicious annual use of the same they may be kept to almost any shape desired, but with these, as with most other plants, a loose free pyramidal form is by far the most pleasing. If the plants have already attained sufficient size, the leading shoots should be shortened back a few inches, taking care, when doing so, to make the cut at a good prominent bud. To save removing the biennial buds thus late in the season, when it is desired to limit the size of the plants, I have always found it the best practice to remove all the young wood buds from the ends of the shoots the moment they show themselves, or are sufficiently forward to be distinguished from the flower-buds. By so doing, those partially developed, that exist at every leaf lower down the shoots, are induced to break, and then, after blooming, they can always be cut back to any of these. Treated in this way, I have never found the least difficulty in keeping plants well wooded back, and of the same uniform size as long as it was considered desirable. If these terminal buds are allowed to remain till the plants have done blooming, most of them will have pushed into growth more or less, and if pruned back after the energies of the plants have been severely tested in carrying a crop of flowers and starting the terminal wood-buds, they could not be expected to break back with the same strength and vigour they would have done had the sap been concentrated in developing buds at an earlier date. To get Camellias into bloom early, they must be induced to make their growth early, and for this reason I advise the removal from amongst others of such as have only a few blooms on them. By taking advantage of moist heat as early as possible, Camellia blooms may be had just as easily during November and December as they can any time after. To attempt to force them into bloom is only to sacrifice any flower-buds they may have formed, as they are sure to fall off if artificial heat be applied, or if they should happen to remain on, the blooms will be very small and inferior in every way to what they would have been if allowed to come on in the ordinary greenhouse temperature. There are some varieties naturally much earlier than others—as, for instance, the old Double White, Chandleri, Donkelaari, imbricata, Jubilee, and many others, so that by getting any of these into heat as early as possible when they have done blooming, or do not show a sufficiency of flower-buds for keeping them on, Camellia blooms may be had during the whole of the winter, where there is a sufficient stock of plants to admit of them being treated as above. With plenty of moisture in the atmosphere and liberal syringings overhead, the Camellia, while making its growth, will stand almost any amount of heat, and may therefore be placed in any forcing-house, or any other structure where it can have a little shade while pushing into growth. Much difference of opinion exists as to the proper time of potting these, but as all evergreens are in an active state at the root during the time they are making their young growth, there can, I think, be no doubt that the above operation should precede that period so as to enable the plants to get well hold of the soil, and having something fresh to grow in during the summer while ripening their wood and forming fresh flower-buds. If deferred till this has taken place, roots are then becoming inactive, and the fresh soil remains in the pots or tubs unused, in which state it is apt to become wet and sour during the winter, and consequently totally unfit for the purpose intended. Therefore, any plants that require re-potting or tubbing should have that attention as they go out of bloom; and, if possible, before the young wood-buds have pushed into growth, as, when they have done so, there is much danger of injuring the young tender leaves, which, if scratched or bruised in the least, would be permanently disfigured. Before re-potting, remove as much of the old inert ball as can be done with safety without injuring the young roots, which in Camellias are very brittle. The best soil for them is the old regulation mixture of peat and loam, which should be used in the proportion of about one-third of the former to two-thirds of the latter. Both of these should be of a tough fibry nature, that have been stacked up for a time; and, in chopping them up for use, keep both moderately rough, so that the roots may be enabled to penetrate it freely, and the water to pass readily through. When used coarse, with plenty of large fibry lumps, the air, as well as moisture, permeates the whole freely, and keeps it in a healthy, wholesome state for the roots to feed on. Where it may be desirable to limit any to the sized pots or tubs already occupied by them, they may with benefit receive a liberal top-dressing of a somewhat richer material than that advised for re-potting them in. To effect this, remove as much of the top of the old ball as can be got away without destroying any roots, and replace the same with good fibry loam, to which add some sheep or cow manure that has been seasoned by laying up for a year or so. Give plenty of manure-water to such as are pot-bound or are carrying a heavy crop of bloom, whenever they require moisture at the roots. See that it is perfectly clear and not over-strong, as it is much better to give it weak and often than in strong doses at longer intervals. Nothing is better for the purpose or more easily made or obtained than clear soot water, to which a tablespoonful of guano may be added. The fertilising effects of these soon show themselves, and they have the advantage over most other liquid manures in that they may be used without being offensive. Where cut blooms of Camellias are in much request, and a convenient place can be found for planting a few strong plants out, large numbers of flowers may be obtained, and finer in every way than from such as are grown in pots. Such shade-loving plants as Camellias will do well in almost any position under climbers, or on the back walls of greenhouses, vineries, &c., where little else would grow. In the latter positions we keep our most useful plants for the purpose of supplying cut flowers, as they are always in at least two months before we can get a bloom elsewhere. Being at the back of the first and second vineries, they have got into the habit of making their growth early, and, with that accomplished, the blooming stage is advanced with the same certainty. The Camellia, unlike most other flowering plants, appears to require a certain time from making its young wood till it expands its flowers; and if the growth be late, no coaxing in any way will induce it to bloom early, as it soon resents the application of artificial heat by shedding its buds. Once get it into the habit of starting early into growth and there will be no difficulty in keeping it up afterwards.—J. Sheppard, *Woolverstone Park.*

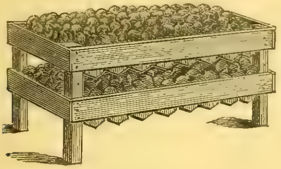
Indoor Fruit Department.

Vines.—Muscats to be ripe in September, with a high finish and good keeping qualities, should now be started, after having been properly cleaned, and the roots and borders put in good order by removing sufficient surface-soil to enable a top-dressing of the richest compost to be given. The latter should chiefly consist of good cow-manure, so placed that the roots can ramify in it early in the season; cover it over with fresh loam so as to present a neat appearance, and give the whole a thorough soaking with tepid water. Keep the house close, and syringe the Vines and all available surfaces night and morning. Before starting the Vines should have been pruned for some time, and the wounds hard and dry, if not, apply Thomson's Styptic to prevent bleeding. Where the first fruit is to be gathered from pot Vines and where the bunches have been thinned, push them briskly along by day and keep the night-temperature at about 60°, rather under than over; that when the weather is favourable give front air at dusk, and water with tepid manure-water when required. Discontinue syringing where the foliage is expanded, but carefully damp all canes or any portions of them on which the buds have refused to break. Where Vines are in flower and require fertilising, we use a fox's tail for the purpose, which we find not only speedy but effectual. Vine-eyes, got ready as before recommended, should be started in a temperature of 55°. All pruning hitherto deferred should be done at once, and the wounds dressed with Styptic.—J. Hunter, *Lambton Castle.*

Peaches and Nectarines.—It is not a very general practice to thin out the flower-buds of these when borne thickly on the trees, but when the practice is performed judiciously it is an operation of great importance in the successful culture of Peaches and Nectarines, whether for early or late supplies. It is well known that those buds which are best placed, and of the most compact form, are by far the most likely to set freely and yield the finest fruit; and those which set large and are well formed take the lead and hold their own to the last. These statements are strongly supported by a Peach-grower whom I visited a few days ago, and whose success with both late and early cordon-grown fruit is not surpassed by any cultivator with whom I am acquainted. His Peach trees, for early fruiting (about the end of April), are kept very thin in the bearing wood; and the buds, which are expected to set best, are left. There is no "dropping" of flowers, and it is seldom that any small useless fruits are formed. Allow the fruit-buds to stand thin enough, so that they can fully expand, and have the full influence of sun and air. Be careful not to keep deluging the trees and floor surface with water, so that the air becomes stagnant, as in damp and dull weather it is likely to do. Plenty of humidity and a healthy atmosphere are of much importance; but an excess of damp, when there is a deficiency of light, is an extreme to be avoided. Aphis may make its appearance at any time, and must be dealt with promptly. Prevention by fumigating when the trees are dry is always a satisfactory method of dealing with these pests. Disbud by degrees, and any shoots growing unusually strong may be stopped. Temperature with fire-heat should not exceed 55° at night. Now is the time to begin to force a house by only shutting it up and using the syringe freely in applying tepid water. In this house fruit will be ripe early in July, and the forcing may be of a mild character. The roots ought to be protected from cold rains and frost; but much heat over them should not be allowed. A soaking of tepid water may be necessary, if the soil require it, and the roots may be found to be in dry quarters, if they are inside. Cleanliness must always be a matter of primary importance.—M. Temple.

Kitchen Garden.

The trenching and digging of all vacant ground will now, or ought to be, finished, and the general routine work will now consist in destroying and preventing the growth of weeds by frequently stirring the soil among growing crops of Broccoli, Cabbages, Winter Spinach, and Cauliflower plants under hand-lights; and, rather than allow these to become crowded, sacrifice some of the plants by pulling out the worst ones, and with light dry soil earth up those remaining. With increased light and sunshine, the plants should remain uncovered all day long, when the air is not actually frosty; and the same remark applies to Lettuces and Endive in frames or under cloches. Thin out and transplant August-sown Onions, and if desired large, they must have deeply trenched ground that has been made firm by treading or rolling, after which plant with a dibble in rows 15 in. apart and 6 in. from plant to plant. Those left in the seed-plot may remain thicker on the ground to be drawn out for earlier use. The variety Giant Rocca is the largest, and is mild in flavour, and keeps, for this class of Onion, a long time. Shallots and Garlic may now be planted on warm borders in rows a foot apart. Chives also, where in request, may be lifted and divided. The herbery should also have attention, and, if supplies be getting short, new plantations can now be made of common and Lemon Thyme, Sage, Mint, Tarragon, and Winter Savoury. Basil, Borage, Chervil, and Marjoram, may be sown under glass and transplanted to the open ground in May. It rarely happens that any other herbs but those named are in request, but it is well to have a root or two of each of the following in case they should be asked for, viz., Pennyroyal, Hyssop, Horehound, Angelica, Fennel, Balm, Burnet, and pot Marigold. Earth up and protect from birds early Peas; if slugs be troublesome, put down bran in patches near the rows; this being a sweet morsel to these pests, they soon find it out and can be caught in the act of eating it. Lime or soot will bear no comparison to this as a remedy for slugs. If a second sowing of Peas have not yet been made, sow at once, as also Broad Beans, a few early Horn Carrots, White-stone Turnips, Radishes, and Lettuce. Of course, the most favourable positions should be chosen for such early sowings. Early Potatoes of the Ashleaf type, if not yet planted, should be located on warm borders, previous to which they should have been sprouted in warmth, and all superfluous eyes or sprouts rubbed off. The annexed illustration shows a handy contrivance for sprouting purposes, its capability of removal from one place to another having much to commend it over the ordinary shallow boxes so generally used. The general stock of all kinds of seeds will shortly require to be sown, and in the meantime proceed with the preparation of suitable seed-beds by levelling the soil that was thrown up in ridges or left rough when trenching. Heavy retentive soils should be "pointed" over a time or two, and, when drying winds prevail, run the roller over it to break the clods. For such soils, a reserve of dry soil for seed-sowing should always be at hand, the great difficulty with heavy soils being to get the seeds to germinate quickly enough; and, if in sowing Peas, for instance, deep drills be made, and 2 in. of dry soil put in, and the soil covered with the same, very little, if any trouble is experienced in obtaining perfect and quick germination. Seeds of Brussels Sprouts, Cauliflowers, and Lettuces, recently sown in heat, must not be allowed to get spindly or drawn; but, as soon as well through the soil, they should be moved to a cooler position. Tomatoes and Capsicums should be pricked off into pots or pans and grown in heat, keeping them as near the glass as possible. If the former be put singly into small pots and grown quickly on in rich mould, they will shortly repay any extra labour bestowed upon them. Earth-up Potatoes that are being forced in frames and pits, and give them an abundance of air, and when water is required let it be of the same temperature as the soil in which they are growing. Keep up the supply of French Beans by sowing a batch fortnightly. Osborn's Forcing and Sion House are the two kinds most suitable for forcing, being early, prolific, and dwarf. If there be one point more than another to be guarded against in the forcing of French Beans, it is never to allow the soil to get dry, for, if such takes place, the plants soon become a prey to red spider, and the crop is ruined. Keep up the desired supply of small saladings by methodical introduction into the Mushroom-shed of Chicory and Dandelion roots and Endive to blanch, and sow Mustard and Cress weekly. Mint will soon be in great request, and also, in smaller quantities, Basil and Tarragon. See, therefore, that the supply be forthcoming by timely attention to them.—W. Wildsmith, *Heckfield.*



Seed Potato-rack.

Forest Trees.

Any forest planting still in progress should be finished off as early as possible, while the weather is favourable for cultural operations, particularly deciduous trees; Conifers and other evergreens can be more safely planted later in the season. Underwood coppices, cut last season, should now be looked over, and, if any blanks or bare places exist, these should be planted with trees 8 ft. or 10 ft. high, for standards at 15 ft. or 18 ft. apart, and filled up with smaller plants for underwood, 5 ft. apart. In strong and tolerably good land Ash will prove the most profitable tree to plant, and Hazel to form underwood; the Ash plants should be protected from ground game by bushing with thorns or any other kind of brushwood, stuck in round about the neck of each plant, for it is astonishing how quickly rabbits detect any new introductions, and they are especially partial to Ash. On light, poor land, Sweet Chestnut and Sycamore will succeed the best; the former is very useful and valuable as underwood, Sycamore is better adapted to grow for timber, for, when it attains large size and is clean grown, it realises very high prices. In damp and naturally wet land, Alder and Willow should be grown, both being valuable as underwood, and the latter especially has been known to fetch high prices in the shape of full-sized timber, for which purpose the Huntingdon and Bedford varieties are the best sorts. Where rabbits are numerous the Bitter Willows ought to be planted—S. monandra, Forbiana, and Kerksii grow into useful underwood, and are rarely injured by ground game. The planting of trees in parks, to take the place of those that are dead and decaying, and to keep up a succession of healthy-growing timber, ought now to receive attention; and it is a matter of great importance to make a judicious selection of deciduous trees for this purpose suitable to the soil, situation, and locality. The following are some of the best park trees, either for massing, or for grouping each kind by itself, viz., Oak, Elm, Lime, Sweet and Horse Chestnut, Beech, Plane, and Sycamore. There are many new and beautiful varieties of these trees, but they should be planted in smaller groups, or as single specimens; the Willow, Poplar, Alder, Birch, and their varieties show to the best advantage near water; the Tulip-tree, Liquidambar, Copper Beech, Catalpa, Scarlet Oak, and Maples (of sorts), planted on a dry subsoil and open airy situation, form handsome-foliaged trees, but, when planted in damp low-lying ground, do not exhibit themselves in their brightest colours. Of dwarf tree forms for smaller groups, and for softening down the stiff outline of larger masses, the Robinia, Pyrus, Malus, Cercis, Sophora, Gleditschia, Cytisus, and Cratægus (from the common to the newer and more beautiful varieties), are all suitable subjects for park decoration. As a rule, Conifers and other Evergreen trees should only be introduced into parks on prominent hills in the distance, on high-lying outskirts to form a background to deciduous trees, or on any high knoll or hill at a considerable distance from the mansion. In parks of small extent, near towns, where it is necessary to hide unsightly objects, evergreen trees may be tolerated; but, in parks of large extent, where there is plenty of scope for landscape planting, the modern fashion or craze for Conifers in groups and dotting about single specimens indiscriminately near mansions, entirely destroys the natural characteristic features of our old English park scenery, and reminds one more of Woking Necropolis than of a good old-fashioned stately domain.—G. B., *Longleat.*

PLATE VII.

ROSE SULTAN OF ZANZIBAR.

Drawn by Mrs. E. WHYMPER.

This is the offspring of a Rose previously raised at Cheshunt, and one which has won some renown, viz., the Duke of Edinburgh (H. P.). Some seed of it was sown in the spring of 1871, in beds a few yards from the spot where the Duke of Edinburgh first flowered. As a yearling it survived the succeeding winter wholly without shelter, and it is acknowledged that open-air sowing and hardy exposure, from the first, form the best tests as to the adaptability of varieties for our climate. It bloomed, and a few were "worked," and, struck by its brilliant colouring, the next year a few more were budded, and the value of the variety was fully proved—a trial of four seasons being a fair test for a Rose. The form is a beautifully cupped globe, showing, however, to advantage the face of the petals. Each of the petals, as will be seen from the annexed plate, is a rich maroon edged with scarlet, a charming combination of colours. In habit it is remarkably free, the few plants in the nursery continuing in flower nearly throughout the season; but, when sketched on the spot by our artist, the first blooms were unfortunately past, so that the size of the flowers shown is only that of the secondary blooms. The first flowers had been exhibited at one of the Royal Botanic Society's *fêtes*, where they gained a first-class certificate, and the name was given in compliment to the Sultan of Zanzibar. It will, we understand, be sent out in June next by Messrs. Paul & Son, of Cheshunt. In 1860, a batch of seedlings was in existence at Cheshunt, some the produce of seed obtained by hybridising General Jacqueminot (H. P.) with the Hybrid Chinese Rose of that name. Two were sufficiently good to have been numbered and proved to be respectively No. 8, Beauty of Waltham (William Paul), and No. 12, Lord Clyde (Paul & Son), sent out respectively by these two firms. The careful watching of the unbloomed seedlings left at Cheshunt proved interesting, and of these some were good, but did not survive. In 1865 Duke of Edinburgh (H. P.) first flowered, a brilliant crimson Rose of extraordinary beauty, and one of which thousands were sent out in 1868; indeed, the annual sale of this Rose has been the largest of any kind except Gloire de Dijon, General Jacqueminot, and Maréchal Niel. During the hot summer of 1870 Roses ripened seed freely, and amongst others Duke of Edinburgh proved a prolific parent. Some large beds of seed of this and of other leading sorts were sown in the spring of 1871. From these several Duke of Edinburgh seedlings were selected different from their parent, and amongst others Reynolds Hole (H. P.), now a general favourite; Sultan of Zanzibar, described above; and a very vigorous and very double Rose, which after being tested for five years has proved to be one of the best autumnal varieties yet produced: this was exhibited at Nottingham, under the name of Dr. Hooker; and The Shah, a Rose which gained fresh laurels last summer—all these have been deemed worthy of distribution. A third generation of Duke of Edinburgh seedlings from Reynolds Hole are now under trial, and may next season prove interesting. From Madame Victor Verdier has been produced a seedling with thorny wood, which, when shown last summer as Duke of Connaught, was generally admired, representing, as it does, a steady march towards scarlet. Lastly, amongst seedlings raised at Cheshunt comes Tea Cheshunt Hybrid. Besides the beds of seed sown, the contents of a few choice pods were raised in pots, and amongst them a few seeds of Madame de Tartas (Tea), a bush plant of which grew beneath an overhanging roof-trained plant of Prince Camille de Rohan. The result was a singularly vigorous young seedling, showing clear traces in its leaves of its Tea Rose parentage. Without waiting for its flowering two plants of it were budded; they did not bloom the first season, but furnished shoots some 6 ft. long, which repaid the venture the ensuing year by giving two long flower-clad rods of a most distinct Rose, which by 1873 was sufficiently tested to be sent out. It was named Cheshunt Hybrid, a name which denotes both its birthplace and character. It has won for itself a good report, and, owing to its general good qualities, will doubtless have before it, like Gloire de Dijon, a long career. Many other seedlings are under trial, and some, as John Bright, have been favourably noticed. Of Mr. Laxton's seedlings entrusted to Messrs. Paul & Son's care to distribute, Annie Laxton perhaps holds the first place; like Edouard Morren, it is a seedling from Jules Margottin. In Emily Laxton, to which a certificate was awarded last season, we have one of the most promising Roses in the section to which it belongs. Prince of Wales (Laxton) is very distinct, but lacks vigour. Princess Louise, a hybrid obtained purposely for gaining the prize for a white seedling Rose which for some years appeared in the schedule of the York gala, is between Mrs. Rivers and Madame Vidot, and is, singularly enough, the freest-flowering true hybrid perpetual Rose we possess. It may not be out of place to state that M. Lacharme, starting with the white hybrid perpetual Louise Darzens, has gone on bringing forward an increasingly beautiful series of white hybrid perpetual Roses, among which may be named Boule de Neige and Perle des Blanches. M. Guillot Père has also followed a strain in the same way, beginning with Victor Verdier, Comtesse d'Oxford, and others of similar character. Many seedlings of Charles Lefebvre were chosen for their variation in colour from the type, but up to the present time W. Wilson Saunders has only proved distinct and always good. It seems to retain all the vivid crimson colour of its parent without the shading. Alfred Colomb has, as a rule, not proved a good parent. Mr. Laxton's Empress of India, which Messrs. Paul distribute this year, and which gained a first-class certificate, is a dark Maurice Bernardin, raised, no doubt, like that Rose, from General Jacqueminot.

Acidanthera bicolor.—In one of the Continental monthlies* is a coloured plate of this Acidanthera, an iridaceous, bulbous plant, a native of various parts of Abyssinia. The genus Acidanthera is allied to Gladiolus and Babiana, from which it differs in the remarkably long, slender tube of its perianth. It embraces about half a dozen species, two Abyssinian and four Cape. The species in question has several synonyms, including Ixia Quartiniana and Sphærospora gigantea, and it has been in gardens for some time under the name of Anisanthus bicolor. The following is a translation of the description accompanying the plate:—"Bulb globular, about the size of a large Hazel-nut, with a dense fibrous net-like tunic, reddish and straw-coloured, and three or four closed sheaths; stem erect, nodding on the tip, somewhat flattened, furnished with sheaths at the base, and bearing narrow, sword-like, pointed leaves with very prominent nerves; flowers, two to four together, in loose one-sided spikes, each subtended by a large bract in front and a bracteole behind; bract leaf-like, three times as long as the bracteole, lanceolate acute, folded together, keeled, and ribbed; bracteole leaf-like, furnished with two teeth; tube of the perianth slender, cylindrical, suddenly expanding into a somewhat two-lipped limb twice as long as the bract; flowers white, each segment of the perianth lined with a purple or white blotch at the base, except the upper large one, which is wholly white; anthers cleft in two at the base, and terminating in a long brush-like point; stigmas curved outward, obtuse, papillose. The stem grows about 20 to 30 in. high, the leaves about ½ inch broad, bract 3 in. The tube of the flower is 5 to 6 in. long, lobes about 1½ in. long by ¾ in. wide. Independently of its beauty, which by the way is not very well depicted in the plate, and the singularity of its long slender flowers, it possesses an extremely agreeable odour, resembling that of some species of Hemerocallis. It propagates freely from bulblets, but they are three or four years before they flower. They should be kept dry in winter. The soil in which it flourished luxuriantly consisted of equal parts of leaf-mould and peat-earth mixed with some silver sand and mellow turfy loam.—W. B. H.

Waterproof Garments.—To waterproof cloth, take half a pound of sugar of lead and half a pound of alum, and dissolve in a bucket of soft water; stir thoroughly half a dozen times at intervals, during which it may be allowed to settle. When quite clear, pour it off (without disturbing the sediment, which would discolour the cloth), and soak the coat or other article in the liquid for twenty-four hours; then hang it up, and let it dry.

Mr. Gladstone has been staying at Hagley with Lord Lyttleton, and it is said that he has been working more vigorously than ever at his favourite exercise—cutting down trees. Can it be that this attack on the monarchs of the forest is a prelude to more destructive measures, and that political energy is to follow upon the vigour shown in felling trees?

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* Monatsschrift des Vereines zur Beförderung des Gartenbaues: Berlin.

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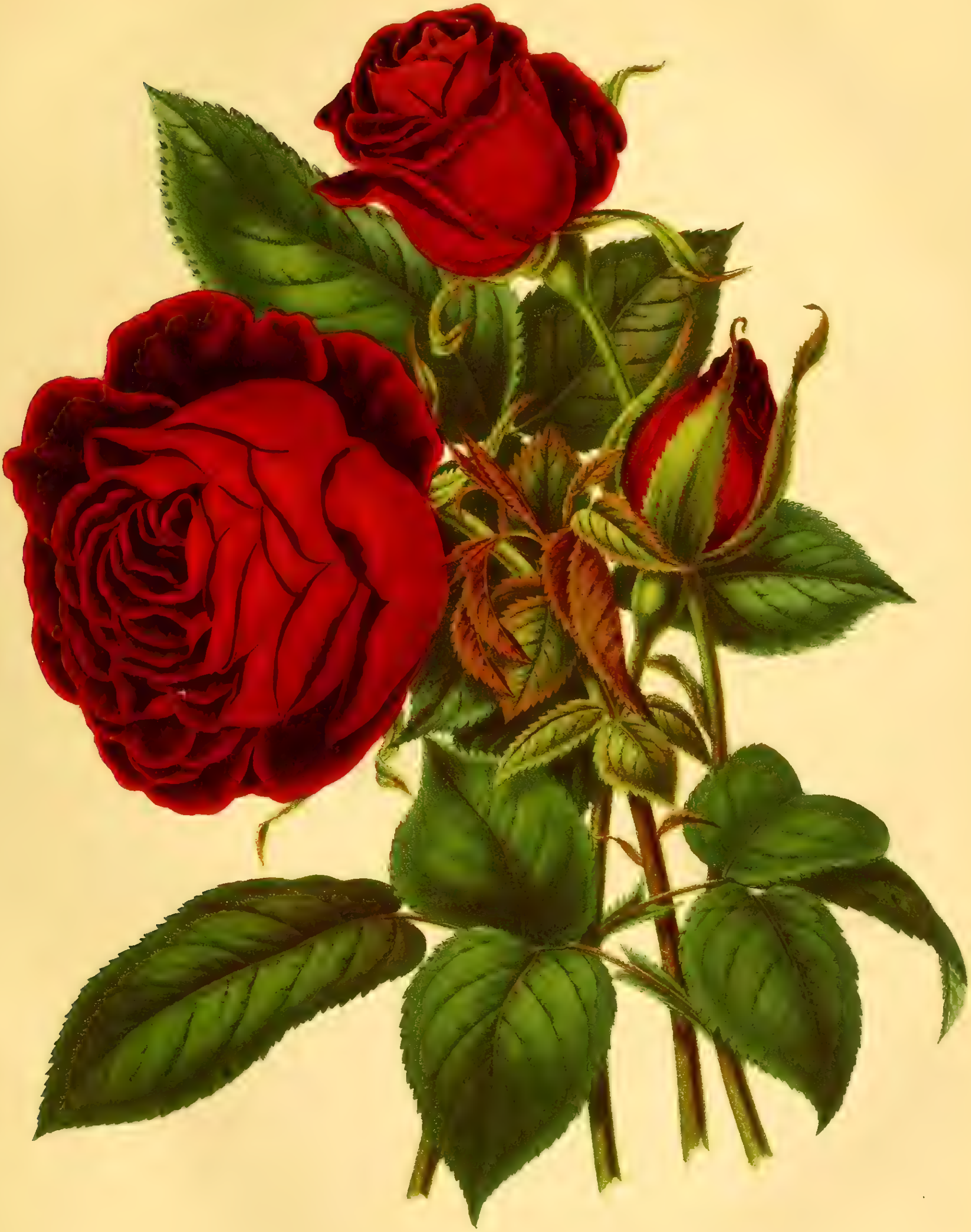

ROSE, SULTAN OF ZANZIBAR

THE ART OF FORESTRY.

The area over which the experience of the skilled forester extends is very wide, whether regarded according to its geographical range, or according to its physiological extent. From the high-water line of our tidal seas—from the lower level at which the scrub of the Ghor is washed by the rapid torrent of the Jordan, 1200 feet below the surface-level of the Mediterranean—to the lower line of perpetual snow on lofty mountain ranges, each orographic province, or zone of vertical ascent, has its appropriate Flora. The forester must be acquainted, not with timber trees alone, but with at least as much of the organic world as is connected, whether in a friendly or in a hostile mode, with their growth and welfare. As to actual trees, the range in size extends from the minute form of the Alpine Willow, which we have picked on the summit of Skiddaw, of less than 3 in. in height, to the lofty column of the majestic Wellingtonia, which towers, in the Yosemite Valley, to an altitude of 350 ft. A height of 200 feet is attained by the Umbrella Pines of Italy. In Sclavonia the Sapin (Abies pectinata) attains an ordinary height of 275 ft. The Eucalyptus amygdalina is described by Dr. Mueller as attaining on the banks of the Yarra River, in Victoria, the height of 420 ft. in many instances. The Californian big tree is said to measure 96 ft. in girth. In length of life and rapidity of growth the diversity is no less marked. A Pinus sylvestris, from Finland, 70 ft. in height and 72 in. in girth, has been found to register the passage of 518 seasons by its concentric rings. The venerable Yews that form a majestic avenue at Studley Royal, or the yet more magnificent patriarchs of the same species that form a kind of Druidic circle in the sequestered and beautiful glade near Guildford, known by the name of "Fairy Land," must have been in existence when the wood of the Yew decided the fate of battle in Norman or even in Saxon times. The Eucalyptus globulus, on the contrary, rapidly attains gigantic dimensions. It has the property of absorbing ten times its weight of water from the soil, and of emitting antiseptic camphorous effluvia. When sown in marshy ground it will dry it up in a very short time, according to the evidence collected by M. Gimbert, mentioned in the "Medical Times and Gazette." In the spring of 1867 about 13,000 of the Eucalyptus were planted at Pardock, 20 miles from Algiers, in a plain situated on the banks of the Hamyze, and noted for its extremely pestilential air. In July of the same year, being the time when the fever season sets in, not a single case occurred; the trees were by that time 9 ft. high. Notwithstanding this rapidity of growth the wood is of great strength and tenacity; and is to be obtained in any lengths. The Eucalyptus rostrata, or Red Gum, again, is a hard dense wood, almost indestructible in water or in damp ground. The wood of some amentaceous trees, and even of the Coniferæ, is converted into pulp for the manufacture of paper; and a Japanese tree furnishes a pulp for this purpose, which more resembles gelatine than ligneous matter in the ease with which it can be manipulated.

The general problem of the distribution of trees and other plants over the surface of the earth was not only unsolved, but unstated, before the time of Linnæus. Even now we are apt to forget, in mentioning that illustrious man, the mode in which, in his "Philosophia Botanica," he indicated the course which has since his time been followed by the most eminent Continental botanists, more especially by the De Candolles, both father and son. The first principle of distributive, or geographical, botany is, as in the animal kingdom, that of the development of species in proportion to the dose of heat. In vegetables this dose is derived from the sun alone. It is thus a question of habitat. The more directly the rays of the sun strike the surface of the earth, and the more dense the atmosphere which they penetrate, the greater is the amount of sensible heat and light. In moving from the equator to the pole we experience a diminution in the sensible influence of the sun's rays which very closely resembles that which is felt in ascending a lofty mountain. Thus while the Equatorial Flora is limited to a narrow belt of earth, the Arctic or the Alpine Floras, the plants of low latitudes and those of great altitudes, are akin, or even identical. Eight successive zones have been pointed out, each of which may be roughly described as determined by an isothermal line dependent on the combined influence of latitude and altitude. In regarding both the Northern and Southern Hemispheres, the number of zones will be increased to fifteen; although, from the unequal distribution of land and water, the area for vegetation is far less, and the isothermal lines are nearer to the equatorial level, in the southern than in the northern part of the globe. These fifteen zones have been divided by Professor Schouw into twenty-five botanical regions, each of which is defined, not by geodesic or photometric considerations, but by the observed prevalence of certain known families of plants.

In the Polar zone vegetation is confined to the Alpine plants, which rise but little above the level of the soil. Mosses and Lichens reach to the snow-line. The Arctic, or Sub-polar zone is the zone of Rhododendrons, which Dr. Hooker has found in the Himalayas at from 7000 to 10,000 ft. The Befarias, which in the New World represent the Rhododendrons of the Old, rise to the height of 13,420 feet on the Andes of Quito, or 120 ft. above the mean limit of shrubs. 11,400 ft. will be the mean limit of the region of Pines, which succeeds that of Rhododendrons. This elevation is attained by the Oak (Quercus semicarpifolia), on the south side of the Himalaya Mountains; while on the north the Birch (Betula alba) grows as high as 14,600 ft. On the Pyrenees the Pinus uncinata is found at 10,870 ft. On the Andes of Quito the Escalonia occurs at 11,500 ft. above the sea. The Sub-arctic zone of the Pines is succeeded by the cold temperature zone of the European trees. The warm Temperate zone, that of the evergreen trees, follows; then the Sub-tropical zone, of Myrtles and Laurels; the Tropical zone, marked by tree Ferns and Figs; and, finally, the Equatorial zone, which is the region of Palms and Bananas.

The distribution in longitude of the various local Floras must be regarded as an observed fact alone, as to the original cause of which science has as yet been unable to afford any indication. Why the Asters and Solidagos in North America should occupy the region filled, in a zone of equal temperature in the Old World, by the Labiatæ and Caryophyllaceæ, while the same temperature of from 52° to 72° in Australia and Tasmania calls to life the Epacrides and Eucalypti, we have yet to learn. The law of the localisation of distinct families of plants is one of the most important objects to be ascertained, not only by the student of forestry, but by the physiological botanist.

The economic value of the products of forestry is of the very first importance. Even considered as a matter of import and export, under which aspects it is possible to arrive at a comparative estimate of the actual commercial movements caused by this great industry, this importance will be manifest. But the absolute necessity of forest products, as the material for, and very mainspring of, other industries, is far more vital to our civilisation than it is possible in any way to indicate by the tonnage or money value of the imports. No adequate substitute can be found for wood. For one purpose, indeed, that is, for fuel, the mineral relics of primeval forests have for a time almost superseded the product of contemporaneous vegetation. Nor is it probable that in the lifetime of the existing generation there will be much change in this respect. But it must be borne in mind that however great be the supply of coal in any country, or in the whole coal measures of the earth, it is a limited and definite quantity. It is a provision which, if constantly sought, must come to an end sooner or later. It has no reproductive power. To an ordinary appreciation it may matter little, so that we are unlikely to witness either the exhaustion, or the panic of exhaustion, of our own coal-fields in our own time, by how many centuries of consumption we may gauge the coal supply of the world. Such will not be the case with the statesman or with the philosopher. To the man who loves his country, who seeks to serve her, and who desires to leave to history the name of statesman or patriot, it must be already evident that the optimist and pessimist views of the durability of our home coal supply are alike extravagant. Whether we accept the highly imaginative estimate (if it can be called by that business-like title) of the Commission of 1871, of a possible supply of 90,000,000,000 (ninety thousand million) tons, reaching down below the surface of our island to a depth where the temperature exceeds 122° Fahr.; or whether we take that practical correction which, by excluding coal that, if it exists, would be impracticable to win, reduces that quantity to a little more than a third, little matters to our present argument. In the latter case our coal-fields would be exhausted, allowing consumption to increase as it has hitherto done, by the year 1945. In the former case the term has not been suggested. But a century sooner or later in the history of a great nation is a matter of comparatively little importance, when it is a question of the displacement of the very centre of gravity of its industrial condition. Again, it is true that the coal-fields of the United Kingdom amount to only some four per cent. of the coal-fields of the world. But this disproportion is not greater than that which exists between the population of the United Kingdom and the population of the world. And even if we strike off the enormous number of the non-industrial, non-coal-burning part of the human race, we still are forced to the conclusion that a result which may be due in one or two centuries in England, and which may be possible in three or four times that length of time in the whole world, is not one which the statesman can afford to ignore. At a period of time not greater than that for which Westminster Abbey has stood (dating, not from the Confessor, but from its rebuilding under Henry III.), it is probable that the coal supply of the world will have been rifled of its cream. If by that time the forests of the world be also destroyed, the future will have a gloomy outlook. Those forests, wisely managed, are adequate to keep the human race in fuel; but if destroyed at the rate at which destruction is going on in some localities, it will be as impossible to restore them as to win back the coal that has been consumed.

At the present time our annual imports of timber, cork, bark, and dyewoods reach the value of some fourteen millions sterling. Of olive, palm, and cocoa-nut oil we import to a value exceeding three millions sterling. Of turpentine, tar, resin, pitch, india-rubber, gutta-percha, and other gums, we import again something in excess of three millions sterling. This total of twenty millions sterling represents a certain regular demand for definite forest produce. If we regard those requisites of daily life which form the subjects of special industries, closely allied to that of the forester, regulated by the same principles, and requiring for their most successful pursuit the same advanced kind of education, we pass from tens to hundreds of millions. In wine and similar products we import to an amount of nearly twenty millions sterling per annum. Our imported corn, grain, flour, rice, and pulse amount to forty-four millions. Sugar, fruit, spices, and condiments; tea, coffee, and cocoa; tobacco and hops; indigo, madder, and other dyes; cotton, jute, hemp, and flax; Esparto Grass for paper-making; vegetable oils, not from the Olive or the Palm; opium and other drugs, flowers, culinary vegetables, and garden seeds, make up a gross annual total exceeding £125,000,000; and a grand total of vegetable imports (exclusive of materials partly of vegetable origin, such as wax) of £210,000,000. This is close upon two-thirds of the total value of the imports into the United Kingdom, which may be roughly taken at the rate of £1,000,000 per diem, counting working days alone. The year from which we have taken our figures is the year 1871, in which the total value of imports is set down, in the House of Commons Returns, at £326,834,647. It has the further convenience of being a census year. The total imports of 1871 were in excess of those of 1870 by £23,577,154, and the latter exceeded those of 1869 by £7,797,279. The amount of vegetable produce annually imported into England is more than double that which the agriculture of the country is as yet able to rear. The land under grain, Grass, and green crops in England and Wales, is about 25,000,000 acres. The number of persons occupied in agricultural pursuits is one-fourteenth part of the population. The return has been estimated at an average of £4 an acre. But this includes the value of animal produce, which is not included in the imports quoted. It is true that very much more might be produced in England and Wales, by the direction of labour now wasted, to the reclamation of uncultivated soil, and especially by the scientific drainage and irrigation of our river-valleys. But it is not a question of area alone with which we have to deal, it is also one of climate. It will be apparent from the summary above given, that a large proportion of our vegetable imports consists of products which Nature has denied to our soil. The tea and the coffee, the spices and condiments, much of the fruit; the quinine and the opium; the cotton, the sugar, and the rice; the indigo and other dyes; the oils, the resins and the gums, that form so large a portion of our imports, could not be produced in our climate. Tobacco is, perhaps, the only important item of this class, the home growth of which is prohibited, not by Nature, but by legislation. But if not from the British Isles, yet from the territory of the British Empire, all these, and far wider, demands can be amply supplied. Of our imported corn and breadstuffs, only about one-tenth part comes from our colonies; fully a third being supplied by the United States, and another third by Russia. From Russia, too, comes more than half of our imported hemp and flax. But hemp is now supplied us from India; flax from Australia; and the special products supplied by almost any foreign country may be obtained, by proper culture, from our own colonial territories. Of some we have, if not the monopoly, yet certainly the most available and productive sources, or, at least, the districts which might be converted into such sources. If we regard the Table of our imports as a sort of bill of fare for the civilised world, the British Empire is able to supply that fare from her own resources, not only to her own citizens, but to the markets of the world. In some instances, articles which long were thought to be the special pride of our own country are now very far thrown into the shade by the products of our colonies. Thus the fame of English Oak, especially for ship-building purposes (although somewhat eclipsed, for a time, by the use of iron) is traditional and well deserved. But Oak, although still ranked in the first class at Lloyds' for ship-building purposes, is inferior to well-known timbers produced by our dependencies; timbers which are only the representatives of hundreds of distinct species. The Teak (Tectona grandis), and the Saul (Shorea robusta) of the East Indies; the Mora (Mora excelsa), and the Green Heart (Nectandra Rodeii) of British Guiana; and the Iron Bark, to which may be added many other species of Eucalyptus, from Australia, are all stronger timber than Oak, in resistance both to breaking and to crushing weight. The Science and Art Department published, in 1867, a set of Tables giving the results of a series of experiments on the strength of British colonial and other woods, made by the late Captain Fowke, R.E., on upwards of 3000 specimens of 600 different kinds of timber. The engineering and commercial value of this result of the patient application of scientific method is of the highest rank. The Iron Bark gives a breaking weight of 11,158 lbs. and a crushing weight of 13,349 lbs. against a breaking weight of 4256, and a crushing weight of 4280 lbs. for Oak; the pieces of wood experimented on in each instance being 2 in. square and 16 in. long. The specific gravity of the Iron Bark is 1·204, in specimens both from Queensland and from New South Wales. That of the Iron Wood of Jamaica is 1·254. At the other extremity of the scale, the Dedoaf Tha, from East India, has a specific gravity of 0·260, being only 0·010 more than of Cork. This enormous range in solidity is not more remarkable than the wonderful variety in texture, colour, marking, scent, and other qualities, of the costly and precious woods which fill the virgin forests of our as yet undestroyed colonial territories. It may be naturally thought that the possession of a vast natural wealth of this nature has been wisely appreciated by our statesmen and legislators. Considering the incalculable amount of national advantage, or loss, that must result from the skilful or unskilful management of our vast forest property, and, indeed, from the whole of our colonial arboriculture and agriculture, our readers may expect to hear that the due education of a class of men fitted to be the guardians of such imperial treasures has been carefully provided for by our Government. So long ago as the time of Queen Elizabeth, the student of English literature is aware, the importance of a study of vegetable culture was insisted on by a great writer, who laboured, as few since have done, for the advancement of knowledge. "God Almighty," said Bacon, "first planted a 'garden.'" On the key-note thus struck depends the tone of the entire treatment of the subject by the restorer of modern science. The imaginative beauty of Bacon's views is not more striking than that clear insight of genius which has pointed out the value of a thorough study of natural history as the very backbone of a liberal education. No parent or preceptor, who has taken Bacon's advice in this respect has ever, we will venture to assert, found cause to regret having done so. How far has this advice been followed with reference to our public service? Forestry, which holds on the Continent an honourable and even a distinguished place amongst the branches of a liberal education, is, in this country, according to the authority of Dr. Hooker, "a subject so utterly neglected that we are forced to send all candidates for forest appointments in India to France or Germany for instruction, both in theory and in practice."

Destruction of Woodlands.

In South Africa, according to reports, millions of acres have been made desert annually, through the destruction of the indigenous forests; in Demerara the useful timber trees have all been removed from accessible regions, and no care or thought given to planting others; from Trinidad we have the same story; in New Zealand there is not now a good Kandi Pine to be found near the coast; and I believe that the annals of almost every English colony would repeat the tale of wilful wanton waste and improvidence." In the year 1830, out of a total area of sixty-six millions of acres, contained in New Zealand (being about six-sevenths of the area of the United Kingdom), twenty millions, in round numbers, were under forest. In 1868, the forest area had sunk to fifteen millions of acres; in 1873 to twelve millions. Stated as per-centage, the 30 per cent. of forest existing in 1830 had sunk to 28 per cent. in 1868, and to 18 per cent. in 1878. The first thirty-eight years had witnessed the diminution of woodlands to the amount of one-fourth, but the second period, of only five years, had seen a further destruction to the amount of one-fifth of the remainder; or at the rate of 4 per cent. per annum. At this rate, the entire woodland of New Zealand would be destroyed by the year 1893. Dr. Hooker wrote the remarks which we have quoted in 1867. At the very time when we reproduce them, the daily press echoes complaints of the wasteful destruction of timber in our few remaining English forests. It is satisfactory to find that, in any corner of the British Dominion, the subject of forestry is receiving adequate attention. It is from that colony in which more thoroughly than in any other part of the world, the English race has struck vigorous root—that island which, from its congenial climate, promises to become the Great Britain of the Antipodes—that the first vigorous protest (with the exceptions above referred to), against wanton forest arson has been raised. We have before us a volume of papers relating to State Forests, their conservation, planting, and management, presented to both Houses of the General Assembly, in New Zealand, by command of His Excellency the Governor; together with a report of the very able speech of the Hon. J. Vogel, delivered in the House of Representatives on July 14, 1874, on moving the second reading of the New Zealand Forest Bill. We cannot do better than avail ourselves of the careful research by which Mr. Vogel has brought together so much definite and pertinent information on the important questions of the rapid exhaustion of ancient forests, and of the pernicious effects thus produced on climate and on vegetation. But while, as a literary *précis*, the speech in question has a singular value, the imagination is more impressed by the vivid picture of the actual state of the newly-settled parts of the globe, than even by the statistic calculations. We seem to hear the axe ringing through the wilds; to watch the progress of the flames as they crackle through hundreds of miles of forest. We become aware that, as we write, irreparable destruction is in full career. We see how slow, feeble, and ineffective is the progress of the planter; how rapid that of the desolater; how clear the duty of preserving that which centuries cannot replace.

Forest Management on the Continent.

The aim of scientific forestry, in its present most advanced state, is to convert the irregular growth of a woodland district into what is called a "geschlossener Bestand," or compact forest; divided into distinct blocks of trees of equal age. The usual "Umtrieb," or rotation, for Beech "Hochwald," or high forest, in Hanover, which may be taken as the model State, is 120 years. The forest is so divided that there shall be as nearly as possible six equal areas allotted to as many periods of twenty years' growth. Thus one block will be full of trees not exceeding twenty years old; a second of trees from twenty to forty years old, and so on. When a block arrives at the last period, felling commences by a "Vorbereitung," or preliminary clearing, which is little more than the ordinary thinning carried on from time to time in former periods. The Beech in these woods only ripens its seed every third or fourth year. After the first seed year in the final period, a "Lichtschlag," or clearing for light, takes place, in order to afford light for the germination of young seedlings; the finest trees being left standing. When the ground is well covered with seedlings, the old trees are felled and carefully removed, and the block recommences growth. The tendency to a gradual removal of the old trees appears to be on the increase, so as to make the culture approach as nearly as possible to the natural growth of a wild forest. The staff for the administration of forests in Hanover consists of two branches, which may be described as preparatory and administrative. All preliminary arrangements, on taking a piece of forest land into culture by the State, are conducted by the "Einrichtungs-Bureau," or survey office. This consists of a "Vorstand," or superintendent; draughtsmen, and clerks who are generally practical foresters; and a staff of surveyors and valuators, who are generally candidates for the office of "Oberforster," the third grade in the system of permanent administration. The surveyor surveys the whole tract of forest, and delineates, with the aid of the valuator, the blocks or sub-divisions into which it is to be divided for permanent culture. A detailed plan is drawn up for the future management, pointing out the mode in which the successive periods are to be worked off, the roads which it will become necessary to make for transport, and the usual details of the condition of the forest. This plan, together with a complete code of rules, is handed over for the guidance of the permanent forest officers. The permanent administration consists of one "Forstdirektor," and "Oberforstmeister," who is also a councillor; twenty "Forstmeisters" in charge of circles or divisions, who form also a consultative council; 112 "Oberforsters," in charge of districts of about 17,000 acres each; 403 foresters; and 343 overseers and under-foresters, who watch the forests, and supervise the work executed by contract or by day labour. A cashier is attached to each over-forester, who receives and disburses all money in and from the forest cash chest, on the orders of the over-forester. A perfect financial check is thus maintained, under the control of the forest-master. The duties of these officials are confined to superintendence. The "Oberforsters" spend the greater part of their time in the forest, supervising the actual operations. So regular and efficient is the entire system that the state of each block of the forest is generally found to be in accordance with the programme laid down on the original working map. There is a forest academy at Münden, and another at Neustadt-Eberswalde, near Berlin. A special branch of the Revenue department of Prussia, presided over by an "Oberland-forstmeister" and "Ministerial Direktor," with suitable branch establishments, exists; and the "Oberland-forstmeister" is curator or governor of the academies. There is also a special office of control, for forest accounts at Potsdam. Captain Campbell Walker, to whom we shall have occasion further to refer, speaks with admiration of the extent and variety of the studies required from forest probationers in Prussia, and the number of years which they spend part in study, and then waiting for appointments. A candidate must keep certain terms at a government school of the first class; then spend a year with an "Oberforster," then pass an examination as forest-pupil. A two years' course of study at a forest academy succeeds, closed by an examination in scientific forestry, land-surveying, &c.; on passing which the pupil becomes a "forst-kandidat." In this capacity he passes two years more in study, during nine months of which he must do actual duty as a forester. Then comes the final government examination, directed to ascertain the capacity of the pupil for applying theoretical knowledge, as to the acquisition of which he was previously examined. On passing this, the aspirant for employment is ranked as an "ober-forster kandidat," in which capacity he is employed as an assistant in the academies and control offices, in making surveys and plans, or in charge of a "revier" or district, receiving daily or weekly allowances. After five or six years of this probation he may expect a permanent appointment. He will then have spent five years in study, and five more in probation, on very meagre allowance; and is rarely promoted to higher grades than that of "ober-forster," unless he has undergone a two years' curriculum at a university. Such is the degree of care which the Prussians consider requisite for the education of their forest officers. It is no easy matter to form a clear and accurate idea of the forest wealth of the world. Data are wanting in many places, and the information which is accessible has been compiled with so little reference to any but special utility, that the very points which are of most general interest are often omitted, as if of set purpose, from returns. Again, it is often not so much from the want of arithmetical data as from the difficulty with which the mind realises the value of enormous numbers, that our want of general grasp arises. Writers are too apt to pursue inquiries into a degree of detail that is altogether unprofitable, from a philosophic point of view, owing to the doubt that hangs over other portions of a subject of which they only examine particular branches. It must be, therefore, by the widest collection, and most simple grouping, of facts, and by a comparative, rather than by a positive, statement of results, that we can most intelligently seek to present this great field to the imagination.

Extent of Land Under Trees.

The forests of Europe have been estimated by Dr. Brown as covering 500,000,000 acres, or nearly 20 per cent. of the surface of the Continent. In British North America, the average given by the same authority amounts to 900,000,000 acres; in the United States to 560,000,000 acres; in South America to 700,000,000 acres. The total thus estimated, for Europe and America alone, is equal to 3,600,000 geographical miles, containing 736 English acres each. If we regard these forests as productive of fuel alone (as, sooner or later, it is to actual forest growth that mankind will have to look for a permanent supply of fuel), it is instructive to compare the area and products of the woods with those of the coal-fields of the world. The total area of known coal measures is estimated by M. Simonin at 25,000 square French leagues. Four-fifths of this area lie within British and American territory, in North America; one-twenty-fifth is in the United Kingdom. It follows that the estimated area of the European and American forests is nearly twenty-seven times as large as that of the ascertained coal measures of the world. The English coal measures, which are in full work, cover somewhat more than 5000 geographical miles. The coal raised in 1869 was 108,000,000 tons, of which about 10 per cent. was exported. Something more than 20,000 tons of coal is thus annually won from a geographical mile of coal measure in full operation. The yield of our coal-fields, during the periods as to which no exact returns are in existence, rose from 10,000,000 tons per annum, at the beginning of the century, to ten times that amount in sixty-eight years. If the same ratio of increase be maintained, our known supplies, down to the depth of 2700 ft. (at which level the temperature is that of blood-heat, and labour ceases to be available), will be exhausted in the year 1945. This will give us the approximate period of a century and a half for the life of a given coal-field of large dimensions. The actual yield of those forests, which are now in course of systematic culture and working in Europe, varies to a great extent. In the most unfavourable districts of Prussia it is as low as half a load of timber per acre, per annum. In Baden it is four times that amount. The latter ratio is calculated on areas actually under crop; the former includes large districts of waste and moor. As we advance towards the equator, the forest products become more important as regards the size of the trees, the rapidity with which they grow, and the density or specific gravity of the timber. A specimen of Pinus sylvestris, from Finland, sent to the Vienna Exhibition of 1867, grown in 60° 50′ north latitude, measured no more than 70 ft. in height, and 72 in. in girth, when 518 years old. In the Teak forests of British Burmah it is calculated by Dr. Brandis that the stock may be entirely replenished, under proper management, in 120 years. First-class trees often attain 15 ft. in girth. A poisonous Antiaris is described as 38 ft. in girth, and 250 ft. high. The Teak is said to attain a height of 32 ft. in two years. Thus, if we take the rate of annual production of wood actually attained in Baden (which is less than the weight of hay that can be grown on an equal acre, under favourable circumstances, in England,) as an average of forest production, we shall be very far within the mark. From three to four loads and upwards per acre per annum would probably be nearer the truth than two loads. Limiting our estimate, however, to the lesser figure, we have an approximate yield of 1500 loads of timber per geographical mile of forest per annum. We have seen that a yield of 20,000 tons of coal per geographical mile is now attained in our own coal-fields. It is unnecessary to go into the exact arithmetical mean of a yield which has increased 75 per cent. in fourteen years; the actual rate is ample for the purpose of comparison. Subject to such correction as may be due to the different quantity of carbon contained in a load of wood and in a ton of coal, which depends on the character of the wood, the product of the coal-field is seven times as much, per mile, as that of the forest. To produce a yield of fuel equal to that obtainable from the known coal measures of the world, if worked with an activity equal to that of our own, seven times the area of cultivated forest is required. But the actual area, as estimated, is not seven, but twenty-seven times that of the coal measures. It is thus four times as important, regarded as a source of fuel. But, while the life of the coal-field has been taken at 150 years, that of the forest, if rightly cared for, will endure as long as that of the human family. A wealth such as this is not to be measured in tons of gold. Immense as it is, if considered only as a source of fuel, its value is far higher if we consider the nature of some of these arboreal products which form nearly one-seventh part of the total value of our imports. The products of tropical forestry and arboriculture are among those objects which give luxury its chief resources, and life some of its most cherished enjoyments. To restrict our consumption to the vegetable products of our own shores, or even of Europe, would be to return to barbarism. We have, however, only estimated a portion of the existing forest wealth of the world. The proportion of the woodland to the whole area of Europe is estimated at 20 per cent. In America the ratio is 21 per cent.; in the United States alone the estimate of Dr. Brown was 25 per cent.; but by 1870 the proportion had fallen to 15 per cent. In New Zealand we have seen that the 30 per cent. of 1830 had shrunk to 18 per cent. by 1873. If we suppose that the forests of Asia, Africa, and Australasia bear the same common proportion of 20 per cent. to the area of the land, we have a further spread of forest, raising the grand total of the forests of the world to 7,734,000 geographical miles, or nearly fifty-eight times the area of the known coal measures of the world. While a great range of this extent, if duly cared for, and wrought with an eye to the future, no less than to the present, would thus be ample to supply every need of a far larger industrial population than we can readily contemplate as living in those parts of the world where skilled labour finds its natural home, no assumption can be more erroneous, more foolish, or more mischievous, than that the supply, however vast, is inexhaustible. The very contrary is the case. The rate of exhaustion of forest, where we are able to measure it, has been so rapid and so constantly increasing as to cause the gravest anxiety. It must be remembered that we are living at the commencement of the most stupendous revolution that the world has ever witnessed. It is not a political but an industrial movement of which we speak, and an industrial movement attended by unexampled physical results. By the use of machinery moved by heat, and, as the most convenient mode of managing heat yet discovered, driven by steam, we have shifted the centre of gravity of human labour. We are multiplying our new servants, the drudging goblins of the steam engine, at an enormous and ever-increasing rate. The discharge of all the heavier kinds of labour in all civilised countries will soon be effected, we cannot doubt, by mechanical power. With the freedom thus given to the hand of the skilled mechanic, his inventive power is allowed fuller play. Each new process, each improved manufacture, stimulates the energy of consumption. The rate of our own production of coal, which has increased, between 1800 and 1869, from 10,000,000 to 108,000,000 tons per annum, is the best gauge that we can present for measuring the rate of the increase annually taking place in the industrial activity of the world.

Forest Re-production.

It is not easy, it is not always possible, to renew extinct forests. Under some circumstances planting can be resorted to with success; but the general outcome of forest experience is to the effect that the systematic care of self-sown seedlings, and the thinning of the young growth year by year according to definite plans, constitute the true method of providing for forest reproduction. Thus, "In 1839, Mr. Williams, dockyard manager, reported to the Bombay Government that in twenty-one months 40,000 Teak trees, between 12 in. and 6 in. in diameter, had been floated down by the contractors (in the Travancore Forests) who had been allowed to act indiscriminately, and that the supply of large timber for ship-building was scanty. The prospects of reproduction of the Teak trees had become so bad through this neglect, that Government was advised to purchase 260 square miles of forest land for replanting young Teak for the use of the Government dockyards. This was actually done in 1842. Several plantations were attempted, but it was found that the expense of planting an acre with Teak was greater than the value of the timber likely to be produced, after 100 years, on a square mile! The British provinces of Malabar, Canara, and Goojerat, Bombay, Madras, Rajamundry, Coimbatoor, and Cochin, containing Teak forests of vast extent, stocked with first-class trees fit to cut, and a natural growth of young trees reproducing themselves, and capable, with proper management, of yielding an ample supply without any chance of deterioration, had in these thirty years been given over to destruction." Again we find that in 1842, when the Government were made aware of the destruction which they had allowed to take place in Burmah, plantations of Teak were formed in Attaran to remedy this evil. The Teak was found to grow freely from seed; but so little care was taken of the seedlings that in 1845 only one tree was found alive. "Dr. Brandis calculates that in order to make Teak plantations profitable after sixty-two years, the total outlay per acre should not exceed sixty-seven rupees. The actual outlay was, however, over 600 rupees per acre, so that Government planting, as a method of restoring the exhausted forests, is a failure." We should remember that the great demand which must hereafter come upon the forest reserves of the world for fuel is as yet comparatively unfelt. In the United States, indeed, the 60,000 miles of railway now in use, or soon to be completed, make a steady annual demand for combustion, as well as for construction. To give 2500 sleepers to the mile these roads require 150,000,000 trees, each tree making generally but one sleeper. These sleepers require renewal every five years; making a demand for 30,000,000 trees per annum. The estimated distance run each day by trains on all the roads is 308,000 miles. Each engine, with an ordinary train, consumes about 1¾ cord for every twenty-five miles. This gives an annual consumption of 6½ million cords of wood. The 60,000 miles of railway require, at the rate of 40 poles per mile, 2,400,000 trees. These also decay, and will require renewal. The demand for lumber increases at the rate of 25 per cent. per annum. The fences of the United States are now valued at 1,800,000,000 dollars, costing 98,000,000 dollars per annum for repairs and renewals. These are chiefly of wood. In 1871, 10,000 acres of forest were stripped of their timber to supply fuel for the single city of Chicago. 63,928 establishments, employing 393,378 persons and using material to the value of 310,000,000 dollars per annum, were engaged, in the year 1869, in manufacturing articles entirely from wood, in addition to the number of 7,439,840 persons partly employed on wood, and using annually wood to the value of 554,000,000 dollars. The estimate given by Mr. Hough, cited in the speech of Mr. Vogel, of 1,000,000,000 dollars per annum as the value of the products drawn from the forests of the United States, falls nearly one-third short of these enumerated items, without taking count of the consumption for the railways.

Timber for Fuel.

In England, and to some extent on the Continent, the comparative cheapness of coal has arrested the consumption of wood as fuel. But this protection is rapidly disappearing. The question of fuel is one which is pre-eminently decided on economical principles. The actual cost at which a given quantity of steam can be produced by the consumption of wood, or of coal, will be found to regulate the choice of combustible. As the price of coal rises, whether through increased cost in winning, or from that alarm as to the exhaustion of our coal-fields which has already produced a serious, and probably a permanent, advance in the market rate, the substitution of wood in part or in whole, becomes more practicable. It may be interesting to glance at the relative calorific value of the different species of fuel, as this will enable us to form a tolerably clear opinion as to the prospects of our supply. The lowest price that we have seen, in any of the works before us, quoted for timber for fuel in England is sixpence per cubic foot. But this includes a large proportion of the price for rent, or royalty, and profit. In the forests of Baden, where water-slides are used for the conveyance of large rafts of timber, "the Fortsverwalter is enabled," reports Captain Campbell Walker, "to fell, slip, and float the trees to a depôt at a cost of 4 kreutzers, say 1½d. per foot all round." This cost is divided into felling, 1 kreutzer; slipping, 1¼; floating, 1¾. In Hanover, according to the same reporter, the price realised for the thinnings of the Beech woods, cut into billets, and piled ready for sale as fire-wood, is as low as 1¼d. per cubic foot. The specific gravity of Beech is greater than that of average Fir, a cubic foot weighing 43 lbs. The calorific value of a load of hewn billets will be thus fully one-fourth of that of a ton of coal. Forty cubic feet of Beech are sold for 5s. The best coal could formerly be obtained at the pit's mouth in many parts of the English coal-fields at 4s. 6d. per ton. Those days, no doubt, are over, but the comparison indicates the line where the cost of each of the two descriptions of fuel is at the minimum. The average price of our exported coal in the year 1869, just before the rise in price commenced, was 9·61s. per ton. In 1874, according to the last returns, it was 17·28s. per ton, and thus about equal to the calorific value of wood at 1⅓d. per foot. But we find the price of Fir in the Earl of Seafield's woods in Strathspey rated at 6d. per cubic foot, Larch being twice that price. The average value of the hewn timber imported into the United Kingdom in the year 1871 was 56·8s. per load, or 13·6d. per foot. It is clear, therefore that the price of coal must continue to rise until it attains something like four times the actual export value, before we are likely to see the introduction, on any large scale, of timber as a competing fuel. While the rate at which the forests of the United States, and of parts of our own territory, are being laid waste, is so rapid, and while the inducement to continue that waste, at least so far as the cutting of fuel and of lumber is concerned, is so great, it is certain that no power but that of legislation will be able to check the progress of destruction. The prospect that, at a time to be measured by tens of years, or even by generations, the woods of any country will be exhausted, will have but little influence on the dealer in fuel.

Trees and Climate.

In Eastern Ohio, William C. Bryant gives evidence that "it is a common observation that the summers are becoming drier, and the streams smaller; several rivers showing a considerable decrease in navigability during the last fifty years. The summers are hotter and the winters are colder." This is referred to the destruction of the forests along the tributaries of the Mississippi. Valencia, in South America, according to Mr. C. H. Granger, was formerly "situate about 1½ miles from a beautiful lake, which was surrounded by a dense forest. The trees were cut away, and in course of time the water receded to the distance of 4½ miles. The trees were afterwards replaced by others; and, in about twenty-two years, the lake returned to its original boundaries." "From all parts of the State" of Maine, according to the Report of the Commissioners of Agriculture for 1860, "comes up the same complaint of the diminished volume of water in the streams, occasioned by clearing up the forests and denuding the hills of trees. The snows are not so heavy nor so frequent as they were twenty or thirty years ago; and there is less rain in the summer. Many of the old trout streams of twenty years ago are now completely dry, and several parts of the State suffer more than formerly from drought. Snow covers and protects the ground with less regularity. . . . The first settlers in the counties of Kennebec and Oxford raised good Peaches in abundance. This fruit retired gradually from Maine, quitted Southern New Hampshire, lingered for a time in Massachusetts, and has finally been driven from all New England, except some favoured spots where shelter has been provided. . . . The same causes materially affect the more hardy Apple." Some twenty-five years ago the Danish island of Santa Cruz was a garden of freshness, beauty, and fertility. Woods covered the hills, trees were abundant, and the rains profuse and frequent. A recent visitor, who sought the island, with which he had been familiar in the time of its greatest beauty, for the sake of botanical study a year or two since, found a third part of it reduced to an utter desert. The short copious showers had ceased, and the process of desiccation was gradually extending over the island. An attempt to restore the former fertility by means of planting was made too late. One planter had set a thousand trees, but every one of them failed. "The island of Curaçao was," again says Mr. Hough, "within the memory of living persons, a garden of fertility, but now whole plantations, with their once beautiful villas and terraced gardens, are nothing but an arid waste; and yet 60 miles away, along the Spanish Main, the rankest vegetation covers the hills, and the burdened clouds shower down abundant blessings." The history of the forests of France would alone be ample to fill all the space at our command. The recent desolation wrought by floods is fresh in the memory of all. "By the destruction in France of a great extent of forests," writes Dr. Brown, "in order to replace them by cultivated fields, the temperature has become very irregular; heavy rains, storms, and dryness have each done their work upon the soil, and made crops every year more and more uncertain." In the Vosges, the destruction of forests has gone so far that agriculture has suffered, the soil has become arid, and inundations are frequent. In the Department of the Gard, in 1837, "no rain fell for nine months." Nismes, named from the forests which once surrounded it, is now amid an arid waste. At Beziers, the Agricultural Society reported in 1797 that the forest which once sheltered the place having been destroyed, the loss of the Olive crop was the consequence. The authorities of the Isère represented, in 1793, that the destruction of the forests had altered the temperature, augmented dryness, and seriously affected the crops. From Provence, from the valley of the Moselle, from that of the Haute Garonne, from the Hérault, and from the Eastern Pyrenees, come complaints of the same nature. The regular rainfall has been diminished, the temperature has changed and become uncertain, and partial and irregular storms have proved curses rather than blessings, wherever the forests have been ruthlessly swept away.

So fully are these facts regarded as established in Switzerland, that in the Social Science Congress at Berne, in 1865, the question was raised as to the means of establishing a common legislation between countries watered by the same rivers, in order to protect their respective interests, by the maintenance of the mountain forests, and the greatest possible attention is now paid to the subject by all the Cantonal Governments of Switzerland. It is hardly necessary, after so much evidence as to the consequences of that destruction of forest which is now so actively going on in many parts of the Old World as well as of the New, to follow Prof. Laurent, of Nancy, in tracing the desolation which has been brought on the former homes of teeming human life in the East by the same cause. Babylon and Nineveh, Thebes, Memphis, and Carthage, now waste and even pestilential, were formerly the very hives of human life. The remains of conduits, canals, cisterns, and pools throughout Palestine, and especially through the now desert country east of the Jordan, are such as to explain the accounts on record of the former population of these regions. So thorough has been, not only the change of climate, but the denudation of soil, caused by the cutting down the Olives, Palms, and other trees of Palestine during the Roman war, that it would be impossible to attach any credit to the most venerable accounts of the former fertility, beauty, and population of the Holy Land (its brooks and fountains gushing out of valleys and hills, being now replaced by bare and solid rock), without the knowledge that we have acquired of the fatal effect of the destruction of timber.

Forests on the Continent and in England.

Into the special products of arboriculture, indeed, we must forbear now to enter. The subject is full of interest. Among the 3000 species of wood of which specimens were shown at the Paris Exhibition in 1867 were to be found samples of the most varied beauty; of ivory smoothness and purity of colour and texture, or streaked, pencilled, mottled, ocellated, and marked with every imaginable caprice. Arboreal products, apart from wood, are numerous. Such are the bark of the Cork-Oak in Portugal, and that of our own Oak coppices and woods, stripped in spring for the use of the tanners. Such are the gums from Zanzibar, from Angola, from Senegal, and from Mogador; the resin from the forests of the Landes, the caoutchouc from the banks of the Amazon. The physiognomy of trees, the mode in which each well-grown tree tends to fill out the sketch given in the venation of the leaf; the effect produced on landscape by the social or solitary growth of trees; the wonderful glow of the flowers of some tropical species, as in that crimson-petalled and glossy-leaved tree that lines the banks of the Parana; the variety of form in the same species, according to locality, as in the Olive, which, from the size of a Currant-bush on the hills near Marseilles, rises to that of a lofty forest tree by the shores of the Ionian Sea; are subjects on which we have no space to dwell. Nor can we pause to speak of the dangers and foes of the forester; how broad spaces should be left as barriers against fire, while at the same time any rash opening cut in a forest may admit the winds which overthrow the trees, or the sun which strikes with fatal energy on their bark. Insect and other animal foes lie in wait for every symptom of weakness—the bark-beetle, the wood-beetle, the squirrel, the rabbit, the field-mouse, the wild hog, the deer. The insectivorous and carnivorous birds are the great allies of the forester, paying ample rent for the shelter afforded by the forest. Against drought, the great foe to agriculture, the forests can protect not only themselves but the neighbouring country. Their only irresistible foe is man—chiefly seen in the guise of the squatter or of the lumber dealer. The contrast that is presented between England (notwithstanding the vast importance of her colonial forests), and France and Germany, in respect to the education provided for the forester, is not the least striking feature of this interesting subject. We have seen how to gain elementary knowledge for the management of the Indian forests it has been necessary to send out officers to study in France and Germany. In those countries, Mr. Webber remarks, "Forestry is one of the State professions of the highest scientific character, and regularly filled from the well-educated class who are specially trained for the purpose." In France there yet exist 2,700,000 acres of State forest, in the conservation and management of which

£500,000 is annually expended; the returns amounting to £1,740,000. Prussia has 6,200,000 acres; Bavaria, 3,294,000 acres: Hanover, 900,000 acres; Saxony, 394,000 acres; Austria, 2,230,000 acres; the Grand Duchy of Baden, 72,500 acres, according to the report of Captain Campbell Walker, who spent four months and a half in a tour through these provinces, at the instance of Dr. Brandis, for the purpose of education as a forest officer in India. Another statement taken from Bernhardt's "Forststatik," for Prussia, Wurtemberg, and Baden; from the "Tharander Forstliches," for Saxony; and from the "Forststatistiche Mittheilung," for Bavaria; is tabulated. by Captain Walker as follows:—

Name of State.	Area of State Forests in English Acres.		Yield of col. 2. Cubic Feet per Acre.
	Productive.	Non-productive	
1.	2.	3.	4.
Prussia	5,836,100	666,175	34·5
Saxony	378,555	15,614	72·5
Bavaria	2,079,835	238,738	63 0
Wurtemburg	469,087	—	84·7
Baden	212,770	18,817	80·6
Austrian Empire	1,576,699	653,347	41·0

The total acreage of the twelve Royal Forests and Woodlands in England, according to a return to the House of Commons in 1863, was 112,376 acres, of which 51,606 were actually under wood. Of these the New Forest, with a woodland of 22,319 acres, had a revenue, in 1871, of £12,034, and an expenditure of £7790. Dean Forest, with 14,754 acres under wood, earned £10,838, at a cost of £7878. High Meadow Wood, lying in the counties of Gloucester, Monmouth, and Hereford, purchased under the provisions of Act 57 Geo. III. for the growth of Oak and Fir, contains 3359 acres, all under wood. The revenue in 1871 was £5176, the expenditure only £1827. The receipts of the whole 51,600 acres, in 1870-71, are reported by Captain Walker at £37,390, the outlay at £22,230. In 1849 the timber in the 40,000 acres of plantations made since 1808 was estimated at the value of £1,087,777, and the value of the same when arrived at maturity was estimated at £10,000,000. Compared with the French forests the revenue is 14·46s. per acre in England, against 12·6s. in France; but the expenditure is 8·22s. per acre here, and only 3·7s. per acre in France; the net revenue in the former country being 6·24s. per acre, against 8·9s. per acre in the latter. Thus the financial outcome of our forestry is better than might have been expected from the absence of regular education for the duties of the forester. It is rather in the general destruction of timber through wide districts of England, and in the wholesale devastation of our colonial forests, that the evil results of our want of study are displayed, than in the actual results of our home State forestry. The net revenue of the Bavarian forests is stated at 8·7s. per acre, and that of the Saxon forests at 12s. 6d. per acre, but in Prussia and Austria the profit to the State is far less considerable. The report of the Vicomte de Bonald points out, with great justice, that the financial returns of forests are so far subordinate to the necessity of a culture that will maintain an adequate supply of fuel, and more especially of timber for construction, that the administration of the forest demesnes should not be under the control of the Minister of Finance.—"Edinburgh Review."

Curious Effect of Frost on Trees.—A correspondent of the "Times," writing from Helsingborg the other day, says:—Part of the south coast of Sweden is at present the scene of a phenomenon so rare that a brief description of it may perhaps be of interest to those to whom such freaks of Nature are interesting. During the last seven days, simultaneous with a very dense fog, there prevailed such a severe frost, that every tree and bush were crystallised, in many cases 4 in. The crystallisation differed, however, from any similar phenomenon I had ever seen before in other parts of the world, inasmuch as it was confined to one side of the objects crystalised, and was formed in so striking a resemblance to the feathers on a quill that the forests, gardens, and avenues, seemed composed of a mass of gigantic quills or plumes. When the fog cleared away the sun shone full out, and a brisk breeze sprang up, the iridescent dazzle of the forests, and groups of waving crystal plumes were beautiful beyond description. Nothing similar has been witnessed in Southern Sweden by even the oldest inhabitants.

Counting the Years of a Tree: L. H.—A good way is to have the section planed, then fix a straight-edge on it, from the centre to the bark, and mark with a pencil the place where the edge of the straight-edge cuts the rings; you can then readily count the marks on the straight-edge. This method is, of course, only approximately correct. It is sometimes desirable to varnish a piece of wood with close rings when evidence as to its age is sought for in this manner.

THE KITCHEN GARDEN.

LATE-SOWN HORN CARROTS.

We have just finished taking up our crops of late-sown French Horn Carrots, as they keep fresher and better in the ground till February. In severe winters, a little dry litter is thrown loosely over them during the continuance of sharp frost; but, with us, that has not been necessary this season, as the only severe frost we have had was accompanied with several inches of snow, which formed a sufficient protection. They were sown the first week in August, on a warm, dry, south border, after a crop of early Potatoes, the only preparation the ground received being a liberal dressing of soot mixed with a small proportion of salt, sown broadcast over the surface, and hoed in deeply. The surface was then raked level, drills drawn, and the seed sown in the usual way. In due course the young plants appeared, and were thinned out to from 1 to 2 in. apart; to be still further thinned when large enough for use, by constantly drawing the largest. Occupying a warm site, they continued growing till Christmas, and are now as fresh and sweet as young Carrots. If left in the ground longer, the roots would have thrown out fibres, which would have injured the flavour. In places where the summer crop is attacked by maggots, a larger sowing might be made in August to lift fresh now, as I have found the late-sown crops do not suffer so much injury from insect enemies, probably one reason may be the earth is so warm, the seeds quickly vegetate, and the young plants rapidly grow away from their foes; at any rate, where there has been a difficulty in providing good Carrots for use after Christmas, this plan is worth an extensive trial. In old gardens, that have long been under cultivation with little change in the mode of culture or variation in the crops, and where stable-manure, with the refuse vegetable substances usually accumulating about a garden, has formed the only manure supply, insect enemies in the grub or larva state are likely to be abundant. In such cases a very slight acquaintance with the use of salt, gas-lime, lime, or soot will convince anyone of their value, when judiciously applied, either as top-dressings to growing crops, or dug into the land in winter. A mistake can hardly be made in the application of soot, but salt and gas-lime may be used to excess, especially where it is necessary for one crop to follow another in rapid succession; and this, perhaps, is one reason why salt is so little used in private gardens. I think it will be readily conceded that in applying salt to land, the nature of the crop following should be considered, as well as the nature of the soil, whether dry and porous or retentive; and, unless something is known of its chemical analysis, it is far better to proceed tentatively; but, at any rate, from ¼ to ½ lb. per square yard may be used with safety on all porous soils, for nearly all crops except Potatoes; and for Asparagus, Seakale, and Onions double the quantity may safely be used. There is one thing in which gardeners might take a lesson from farmers, and that is in their applications of stimulating manures. I am convinced that, even where other kinds of manures are abundant, in a climate like ours, if our efforts to get things good and early were aided by the application of some concentrated stimulant sown with the seeds in very small quantities, just to give the young plants a fair start, very few failures need be dreaded: I will just give one instance that has a bearing upon this. For several years I had the greatest difficulty in preserving the earliest crop of Turnips from the fly—so persistent and destructive were their attacks. I tried all sorts of surface-dressings, but success was far from perfect till I adopted the expedient of mixing salt, guano, and wood ashes together, the latter far in excess of the two former, and strewed the mixture thinly along the drills on the top of the seeds. I had read that guano and salt would destroy the vitality of all seeds with which it came in contact, and, therefore, I proceeded cautiously; and I can only say that I have not since sown the seeds thicker than formerly—indeed, not so thick—and I have always plenty to hoe out. I believe the larvæ of the flies are in some way attached to the seeds when sown, and the small quantity of salt ensures their destruction before they are developed, whilst the guano pushing the young plants on so rapidly they soon grow away from the few insects that may ultimately struggle into life. This, however, opens up a wide field for discussion that can only just be glanced at in a short paper. Edward Hobday.

American Potatoes Degenerating.—Like Mr. Groom (see p. 124), I have not found the American Potatoes degenerate when grown in this country. I have grown the American Early Rose for some years, and have found no deterioration in it, but I have now discarded it, owing to its bad flavour. The Extra Early Vermont, a newer variety of the same section as the Early Rose, is another productive kind, but not of good quality as grown in the strong soil of the garden here. No doubt soil and seasons have some effect on the qualities of these American varieties, and the only sort I find, when grown year after year, worthy of a place in my collection is Climax; but, if Snowflake, sent out last year, be at all good for the table, it may be grown with advantage on account of its fine shape and good cropping qualities. I see that Potato seed, grown in America and raised from their sorts, is advertised for sale in this country, but I should rather prefer sowing seed from good sorts here if crossed with American varieties.—William Tillery.

Forcing Asparagus.—For this purpose strong, healthy, well-developed crowns and roots should be selected, which at four and five years old are at their best for forcing. They start more readily into growth, and, according to a writer in "The Gardener," are more remunerative at that age than younger or older. The first roots placed in heat on the 1st of November last are not yet exhausted. They were forced in the bed of a Cucumber-house, where there is a bottom-heat pipe underneath, with about 1 ft. of broken bricks between it and the soil. About 2 in. of soil were spread over the surface of the bricks, and on this the roots were closely packed; 3 in. of soil were placed over the crowns, and the whole was thoroughly watered with tepid water. The heat in the soil remained steadily at 50°, and the air temperature between 60° and 65°. Most of the stalks have been cut when 12 in. high, and being fully exposed to light, they were quite green. When allowed to grow longer Asparagus becomes less tender, and to cut it before it grows to this length is extravagant. It is always cut over at the surface of the soil; and although an inch or two might be got underneath, it is always tough, and when cooked is deficient in flavour. A few of the smallest stems are allowed to grow tall when they branch out, and the delicate tops are cut and used with excellent effect as greenery amongst cut flowers. Asparagus can be much more profitably forced in structures of this kind during the cold winter months than in frames set on a hot-bed. It does start away freely in the latter at first, but the heat soon declines, and a good deal of what it ought to produce is consequently lost. Manure frames do very well with which to begin forcing about the middle of February or beginning of March, so that when the heat declines, there is enough of warmth in the air to bring up all there is to come. In whatever position Asparagus is forced, the stems should be fully exposed to light and air throughout their growth, otherwise the flavour will be deficient.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Importance of Heeling-in Broccoli.—Many practical gardeners will endorse Mr. Baines's statement (see p. 124) in reference to this matter. Here, with us, in severe winters, Broccoli or no Broccoli is simply a question of partially lifting the plants and laying them down, heads northward, about November. We tried to do without lifting one season, and lost half our plants—the lifting prevents us losing any.—W., *Sheffield*.

Potatoes for Exhibition.—The best four sorts in each section at the late Alexandra Palace Potato Exhibition were:—Of white Rounds—Model, Rector of Woodstock, Porter's Excelsior, and Early Market; of coloured Rounds—Red Emperor, Scotch Blue, Blanchard, and Early Oneida; of white Kidneys—Waterloo, Snowflake, Lapstone, and Excelsior; and of coloured Kidneys—Bountiful, Extra Early Vermont, Purple Ashleaf, and Salmon Kidney.—A. D.

Large Seeds Best.—Looking upon the plumpest, best developed, and consequently largest seeds as the best, I have, like many other gardeners, been in the habit of selecting our Melons, Cucumbers, Beans, and other large seeds for planting, because we have long known that they produced the best plants, but, though the rule will, no doubt, hold good with regard to small seeds, such as those of Turnips, &c., (see p. 124), selecting is not worth the trouble. Seed is not so very dear; therefore, sow thickly enough, allow for vermin making "a selection," and in due season thin out to the best plants.—J. S. W.

Early Market Garden Potatoes.—The best Early Kidney for market purposes is Myatt's Prolific Ashleaf, and the best early Round is Fenn's Early Market. This kind, which is new, is a first early, and has an exceedingly short top, which does not interfere with the growth of a succeeding green crop. A fine successional Kidney for market purposes is Dawes' Matchless, as its large white mealy tubers are fit for sale and are in great demand even before ripe. It is highly esteemed as a market kind in West Middlesex. It is probable that the new American Snowflake, which is an early second early, will shortly become a popular market variety.—D.

THE FLOWER GARDEN.

HARDY FLOWERS NOW IN BLOOM.

Some of the choicest gems of the early year, Iris (Xiphion) Histrio for example (see p. 29), are already over, and their places supplied by others. Iris reticulata is pushing up odd blooms here and there in Mr. Barr's grounds at Tooting, and a few warm bright days would bring out many more. Of this Iris there are two distinct forms—one with deep bluish purple flowers, the other red or bronzy; both are, however, very beautiful, and should have a place on every dry sunny border. Anemone blanda, one of the earliest of blue flowering plants, is cropping up here and there, but it wants warm sunshine to enable its flowers to expand properly. This is one of the prettiest of our early flowers, and, fortunately, one which is easily propagated by cutting up its tubers in the autumn. In order to see the beauty of these Irids, the blue Anemone and its allies, the Hepaticas, to the best advantage, they should be planted in patches here and there on the herbaceous border, or used in quantity to fringe the edge of the rockery or root-garden, and with them should be associated the never-failing winter Aconite and a few of the earliest yellow Crocuses for contrast. How rarely do we see Snowdrops and Daffodils sprinkled on the green turf in outlying portions of our gardens, and yet how beautiful they look in many old country orchards and paddocks? The hardy Cyclamens are in good condition just now, especially the following—viz., C. vernum, a kind with flowers of the most vivid magenta; C. ibericum, C. Coum, C. Atkinsii, and other varieties of these kinds; while C. hederæfolium, and its variety C. græcum, although not in bloom, are very ornamental, inasmuch as they carpet the bare earth with their large and beautifully marbled leaves, and nothing can be prettier than natural-looking patches of these plants in the rock garden or elsewhere with a few Snowdrops or Crocuses dropped in irregularly among them, but not in rows or formal patterns, which would be unsightly. Snowflakes and Snowdrops are everywhere pushing through the ground, the common Galanthus nivalis, however, being the only one in full flower. G. Elwesii, G. Imperati, and the Crimean Snowdrop (G. plicatus), are, however, shewing colour. The common Snowdrop, lovely as it is in many sunny country orchards among the Grass in early spring, is even prettier, if possible, when plucked and made up into little posies; indeed, a little bunch of Snowdrops and Violets forms the sweetest and most tasteful of all button-hole bouquets. As regards pearly whiteness few flowers can compare with the Snowdrop: place one beside the Lily-of-the-valley or the whitest Odontoglossum, and they look creamy-white or actually yellow. Crocuses are now beginning to make their appearance in quantity. The lovely fawn-lilac and purple-flowered C. Imperati is already very beautiful, as is also lilac C. Sieberi, which is one of the most distinct of all the early-flowering kinds, and there are, likewise, forms of the common yellow and common purple (C. vernus) showing colour.

Christmas Roses are still showy, and for cut flowers are invaluable, for if the flower-stems be cut when the first blossom expands, they open out all their flowers well in water indoors. H. Olympicus is showing rich maroon-coloured flowers, along with those of H. niger, H. maximus, and H. purpurascens. Christmas Roses seem to be in great confusion as regards nomenclature; for example, the beautiful, large flowered form recommended by Miss Hope as H. maximus is by Herr Max Leichtlin (see p. 137) referred to H. abchasicus of Robert Brown. I find H. abchasicus is a species described by A. Brown (see Otto Garten-Zeitung, 1858-1). If I mistake not, this H. abchasicus is a Hungarian plant, of which there are two well-marked forms, one with purplish flowers, hence named H. purpurascens, and another with nearly white flowers, which is grown in gardens under many different names, and, together with H. guttatus, it has given rise to a beautiful race of very showy striped and spotted hybrids in the Botanic Gardens at Berlin. These new forms do not appear to be yet introduced to our gardens—a fact to be deplored, as they would form charming companions to the white and pale rosy form of our common Christmas Rose. I mention these here so that all who desire them may make inquiries about them at the Berlin Garden, and I hope some botanist, who appreciates the early beauty of these Hellebores, will take them in hand and unravel the now confused and confusing synonymy. This is rather a dull season for aquatics, but one at least is in bloom, namely, Aponogeton distachyon. Of this I gathered several fresh spikes from plants in Mr. Parker's nursery at Tooting a day or two ago, and they are now quite fresh in a glass of water. There were dozens of fine spikes on the plants which have been blooming all the winter in the running water of a shallow ditch, and are quite uninjured. For cut flowers this plant deserves attention—its white bracts and black anthers contrasting together very beautifully, and for grouping in moist Sphagnum Moss and water, in shallow vases or glass dishes, along with purple Crocuses, Snowdrops, Sweet Violets, Hepaticas, Iris, and other short-stalked spring flowers, it is very sweet and attractive. On dry sunny banks a few early Violets are to be found, and the hardy Primroses are showing colour here and there; indeed, the common yellow and double lilac varieties have been in bloom, more or less, for the past six weeks. The yellow Jasmine (J. nudiflorum), associated with Ivy-covered walls, is now at its very best—a green background sprinkled with golden stars, and in some places we have noted the effect still further heightened by variegated Euonymus and Ivies, among which the handsome scarlet-berried Cotoneaster Simmonsii and Pyracantha japonica are trained.

F. W. B.

Dwarf Calceolaria.

Dwarf Herbaceous Calceolarias.—MM. Vilmorin, Andrieux, & Cie., of Paris, have lately introduced a dwarf strain of Calceolarias. They are described as remarkable for a dwarf, bushy habit, with the flowers arranged in a large and thickly-set bouquet, the blossoms being of first-rate quality as regards size and markings.

Eryngium eburneum.—Under the head of E. Leavenworthii, reference was made to several species with ornamental foliage recently introduced to gardens, and their decorative value is so considerable that some special notice of their merits seems desirable. The E. bromeliæfolium is now pretty well known, and it may be taken as the type of the more recent introductions in the same section of the genus, which agree with it in forming radical tufts of narrowly linear or linear-lanceolate channelled foliage, from 1 to 2 ft. or more in length, with parallel nerves, and spiny at the margin, whilst from the centre of the tuft arises a tall paniculately branching stem, bearing numerous rather small heads of flowers. In E. eburneum the foliage is broader than in the preceding species, and forms handsome effective tufts. In E. pandanifolium the leaves are twice as long as in E. eburneum, more uniform in breadth, and more erect in their growth. In E. Lasseauxii the foliage resembles that of Yucca angustifolia, and is less spiny than the species just named; the flowers are also said to differ in being of a reddish colour. All these plants appear to be hardy in dry soils, with a covering of dry leaves or straw in severe weather, but they are likely to perish in wet soils and may advantageously be cultivated in large pots, the seedlings being first pricked off in small pots, and shifted successively into larger ones, as growth advances. Abundance of moisture during summer and autumn is an essential feature of their treatment. They are natives of southern Brazil, or of the Argentine provinces.—W. Thompson, *Ipswich.*

Plant protectors.—In our changeable climate it is of the greatest consequence to plants to preserve them as much as possible from injury caused by these changes, and above all to supplement the coating of snow, which in the colder regions of the world protects plants from the injuries of exposure. I tried the refuse of Cocoa-nut matting, but it was unsatisfactory. It then occurred to me that there was no non-conductor like hair, and no cheaper commodity. The hair dressers throw away all their hair which at present is useless. Quantities of horse-hair (the result of clipping) is also thrown away. I use both with great advantage; it makes what I call false snow, protects the small plants, and with a little difficulty may be arranged to protect the larger plants and the bases of delicate trees, and entirely prevents their being injured by frost; and, amongst other advantages, slugs cannot travel in it.—Egerton Leigh, *High Leigh.*—P.S. I think bulbs surrounded by hair might be benefited; and though I have not tried it, many sorts of seeds dropped in hair and covered with a thin layer of earth might be more easily propagated than at present.

Early Flowers at Bitton.—The season is rather backward, but I have noted the following plants in flower to-day (Feb. 1):—Crocus mœsiacus, susianus, Imperati, lævigatus, and vernus; Primula veris, v. double and coloured, and polyanthus; Common

Snowdrop, and its double variety, and Galanthus Elwesii; Hepatica, red, white, and blue; Mahonia japonica and Aquifolium; Garrya elliptica; Viburnum Tinus; Erica herbacea; Leucojum vernum; Filbert; Ulex europæus; Tussilago fragrans; Helleborus niger and maximus, cupreus, orientalis, kamskatkiensis (?), atrorubens, guttatus, lucidus, antiquorum, and olympicus; Arbutus Croomii; Chimonanthus fragrans; Xiphion Histrio; Eranthis hyemalis; Violet Czar; Cyclamen Coum and ibericum; Iberis semperflorens; Daphne indica rubra; and the naked flowered Jasmine (Jasminum nudiflorum).—H. N. Ellacombe, *Bitton Vicarage.*

A Misnamed Primrose.—Allow me to protest against the loose way in which "A. D." uses the name Primula altaica in The Garden. He is thinking of one of the coloured varieties of the common Primrose, but will not so call it, to the confusion of those who know nothing of those things, and the annoyance of those who do—for the difficulties of plant nomenclature are sufficiently formidable without adding unnecessary confusion by wrong names. It has been shown again and again in The Garden that the plant meant by "A. D." is simply a variety of the common Primrose, and that it has no claim whatever to that of altiaca, which belongs of right to another species.—V.

Large Christmas Roses.—Christmas Roses were never finer than they are here this season. I measured one bloom yesterday (Jan. 31), and it measured rather more than 4 in. across. One plant is producing some forty blooms. Christmas Roses are said to object to being transplanted, but all my plants now in such fine bloom were lifted in September and planted in good loam and peat on the edge of a Rhododendron bank. For the decoration of rooms nothing can look better than vases of Christmas Roses fringed with leaves of Hedera maculata variegata. Are my Hellebores the true Helleborus major or maximus? The fact that they have but lately come into bloom would seem to indicate that they are not; but does the true maximus produce larger flowers than those which I have described? They resemble blossoms of a beautiful white Clematis.—Herbert Millington, *Bromsgrove.*

The best Phloxes.—Some of the best of the herbaceous Phloxes will be found among the following:—White Lady, the best of the whites in the decussata section; Madame A. Damesnil, white with purple eye; Madame Maisonneuve, white with crimson eye, and somewhat flushed; Mademoiselle Marie Saison, white with purple eye; Coquette du Parc de Neuilly, white with bright purple eye; Eugénie Immer, white with delicately-tinted purple eye; Comtesse de Turenne, white with delicate purple eye, a very chaste-looking flower; coccinea, a bright but dark carmine crimson; Resplendent, carmine-scarlet; Lothair, light salmony-scarlet with dark eye; Madame Caillard, bright salmon with dark eye; Rivière, fine salmon-scarlet with dark eye; Mons. Jigne, rosy-salmon with dark eye; Mademoiselle Hermine de Turenne, purple crimson; Madame Godfrey, bright purple; M. Guldenshurch, rosy-pink with dark eye; Menotti, lilac with white eye, very distinct; and Madame Durenne, lilac with broad dark purple centre. These are all fine, of good habit, and striking colours.—"Florist."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Transplanting Rose Cuttings.—Following the advice given by you last year (see Vol. VIII., p. 102), I put in several cuttings of Roses in July and August. These look exceedingly well at present, and are making beautiful shoots. I should be glad to know when they should be taken up and planted in the borders with the other Roses. May they be moved this year, or would it be wiser to wait till next? They are in the open ground.—D., *Leicestershire.*

Primula vulgaris grandiflora.—According to Mr. Niven P. altaica is in future to bear this name; but, looking at its charming mauve hue, it seems to me that the title of P. vulgaris cœrulea would have been more suitable. It is, however, too late now to suggest such an amendment. From a cross with this kind and P. vulgaris auriculæflora I obtained some lovely seedlings, possessing violet-purple and intermediate tints that are most welcome.—A. D.

Myosotis Imperatice Elizabeth.—This is a very beautiful little hardy plant. I believe it is a hybrid from M. azorica, of which it retains the deep ultramarine hue, but it has the free habit and hardiness, at least in this mild climate, of M. sylvatica. At first it was considered tender, but it has stood out in the open border without any protection for the last three winters. It is easily increased by cuttings.—Salmoniceps.

Destroying the American Water Weed: (J. Y).—Empty the pond, and rake it out. Swans will help to keep the pest down. Nothing but repeated attention will keep it within bounds. After a time, however, its growth is often less vigorous than when it first appears, owing no doubt to its exhausting the soil of its more special requirements. It will, probably, in time be re-placed in its turn by other plants, as, indeed, we have noticed in one piece of water already.

Celastrus scandens.—This climbing North-American shrub, related to the Euonymus, produces masses of orange-scarlet fruit in winter, and, if properly grown, may be made to present a brilliant display. It is popularly known in America as Bittersweet or Wax-work.—W.

NEW PLANTS, &c.

Wallisia princeps.—A showy Gentianaceous plant, known also as Lisianthus princeps, and a native of the Columbian Alps and also of New Grenada at an altitude of 10,000 to 12,000 feet.—"Gartenflora," t. 839.

Crocus veluchensis.—A very showy purple-flowered Crocus, a native of Greece and Transylvania. It is a very rare plant in cultivation, and has flowered with the Rev. H. Harpur-Crewe, who received it from Herr Max Leichtlin. Mr. Baker remarks that Col. Trevor Clarke sent a flower of C. vernus of nearly exactly the same colour. This plant is said to differ from C. Sieberi in having a purple throat like the segments instead of a yellow one.—"Botanica Magazine," t. 6197.

Carica candamarcensis.—A graceful little Papaw tree, a native of the Andes of Ecuador, and raised by the late Mr. Hanbury from seeds sent home by the late Professor Jameson, of Quito. It flowered in an open border at Clapham in 1874. Mr. Spruce calls this the common Papaw of the Andes, where it is grown for the sake of its edible fruit up to an elevation of 9000 feet. The flesh is white, not yellow, as in the common Papaw. It has been introduced to the Belgian Nurseries, and has recently fruited in English gardens.—"Botanical Magazine," t. 6198.

Dendrobium amœnum.—A very pretty little slender-stemmed Dendrobe, bearing two or three-flowered fasicles of white flowers, each segment being tipped with lilac-purple. In general appearance, this plant very closely resembles the old D. transparens, and is very distinct from D. primulinum, which is, indeed, one of the best forms of the D. Pierardi group. D. amœnum has been introduced from the Himalayas by Mr. W. Bull, and is said to grow at an altitude of 5000 feet. It has been shown repeatedly at the metropolitan exhibition, by Mr. Bull during 1874-5.—"Botanical Magazine," t. 6199.

Calochortus citrinus.—This is a showy-bloomed Californian species, that bears flowers fully 3 in. in diameter, the petals being somewhat rhombiform of a deep orange-yellow colour, and very hairy. The species previously known are—C. venustus, C. Leichtlinii, C. Gunnisoni, C. splendens, C. macrocarpus, and C. luteus, and of these C. venustus is by far the most attractive, and, like the present species, it has recently flowered with Mr. G. F. Wilson, at Heather Bank, Weybridge. C. citrinus is described as being somewhat intermediate, between C. splendens and C. luteus.—See "Botanical Magazine," t. 6200.

Decabelone Barklyi.—This is a south African species, quite distinct from D. elegans (see "Botanical Magazine," t. 6115), which has large pendulous flowers. In habit it reminds one of the columnar Euphorbias, more than any of the Stapelias to which it is nearly related. The tufted seven and eight-angled stems are 5 or 6 in. in height, the bell-shaped five-lobed flowers being borne erect in pairs, and of a soft yellow colour, profusely spotted with brown. It will be a useful addition to the collections of succulent Asclepiads.—"Botanical Magazine," t. 6203.

Nicotiana Tabacum (var. fruticosa).—One of the numerous forms of the common Tobacco plant, originally brought into cultivation from South America, and now popular in our gardens during the summer months as decorative plants. It grows about 2 feet or more in height, having clammy leaves, rarely over a foot in length. The flowers are in terminal panicles, comparatively tubular, and of a pale rosy colour.—"Botanical Magazine," t. 6207.

Cucumis sativus (var. Sikkimensis).—This is the supposed hybrid Melon-Cucumber, figured and described in The Garden (p. 235, Vol. VIII.), and though very distinct in general appearance, it is only a form of the common cultivated Cucumber of our gardens (C. sativus), which its leaves and flowers closely resemble. The fruit is about a foot in length, and thicker or more swollen than in the common Cucumber, and, although the young fruits are prickly, these prickles become nearly obsolete or reduced to blunt tubercles, when the fruit attains its full size. Its skin is of a warm brown colour, and when ripe it crackles all over like the "netting" of a Melon, and the white inner coat beneath shows through and adds to the ornate character of the plant. The origin of the common Cucumber is by no means well known; Dr. Hooker and M. Naudin both consider it that is a cultivated form of, or, rather, that it is a species evolved from, C. Hardwickii (Royle), a native of the Himalayan Range, where it is found from Ramaon to Sikkim.—"Botanical Magazine," t. 6206.

Nearly 200 tons weight of Orange blossoms are used in the manufacture of perfumery in the town of Nicealone.

NATAL FRUITS AND VEGETABLES.

A writer in "Fraser" gives an account of the fruits and vegetables of this colony, which is more candid and trustworthy than most accounts that are printed respecting exotic fruits. Of the fruits in Natal the Orange ranks first and foremost. Most people know that the Orange tree is one of great beauty, though the stunted hot-house specimen in this country can scarcely bear comparison with its more fortunate relative that lives always in open air, in a climate that suits it, and which spreads at will its lovely dark leaves, and sweet-scented flowers, and profusion of golden fruit. I think there is nothing prettier than a well-grown Orange grove, with the trees full of flowers and fruit together. They are trees that require little care; an occasional pruning keeps them in very good order. There are several different kinds of Orange in Natal. The most common are of a large size, and have a much deeper and tougher lining to their coats than those that are imported into this country; but they are deliciously sweet and juicy in spite of their unpromising exterior. It is surprising what a difference there is in the flavour of an Orange just picked and in one that has been kept; they seem to lose half their taste when they have been lying about for some weeks. Besides the common kind of Orange, they have the Natje, or Mandarin, a small flat fruit, with much juice, but of excellent flavour. It seems a thousand pities that the Oranges cannot be turned to more account. A good many are sold, but quantities lie about under the trees and are wasted. They are very good preserved whole, or made into marmalade. It is a mistake to suppose that it is necessary to have Seville Oranges for that purpose; the common yellow kind does just as well. Lemons in Natal are by no means so satisfactory as Oranges. They grow to a large size, and are nearly all rind and tough white lining, with very little juice. Citrons are plentiful, but cannot be considered a useful fruit—only good for candied peel. Limes flourish, which are nice in hot weather to make refreshing drinks with, and I think they come to as great perfection in Natal as they do anywhere.

Bananas deserve to be mentioned next. The Banana grows to a good height, and is covered with large limp leaves that hang down, some a foot or more in length; which leaves have a way of rustling when the wind blows through them, like the ghost of a lady in a stiff silk gown. The fruit is mealy, insipid, and of a slightly Pear-like flavour. A taste for it is acquired; few people like it at first, but it improves on acquaintance, and children get very fond of it; and it is good for them, being a wholesome and nourishing fruit; indeed, it may be regarded more in the light of food than ordinary fruit, for it is so satisfying that after a good handful of Bananas one would feel one had had a tolerably substantial meal. They are excellent also cooked in the form of pancakes or fritters. Plantains are a coarser and larger species of Banana, and to my mind inferior.

There are three kinds of Guava in Natal. They are a coast fruit. I cannot say that I have seen them grown much about the part I know best—the neighbourhood of Maritzburg—but at the Chace, a beautiful garden in the Town Bush Valley near Maritzburg, they have the three sorts. The largest kind is about the size of an ordinary hen's egg. It is covered with a thin yellow skin, and the inside is pink and pulpy. It smells very much like a mouse, which is not so pleasant; but if one holds one's nose tightly and eats it very quickly it really is not bad, and rather refreshing in hot weather. The small yellow Guava is a poor imitation of its larger relation, and somewhat flavourless, but is without the mouse-smell. The little red Chinese Guava is delicious; too much cannot be said in its favour. In shape and size it is not unlike a small Medlar, but of a deep crimson colour. It has a slight taste of Strawberries, combined with a delicious flavour peculiar to itself. It is altogether excellent. It is of this Guava that the far-famed jelly is made; and I think that prepared in Natal quite equals what we get from the West Indies, and it is far cheaper.

Loquats are an agreeable and useful fruit. They grow in thick bunches, on a handsome, well-shaped tree, that in its height, and the colour of its leaves, reminds one of the Laurel at home—but the leaves are smaller. The fruit is about the size of small yellow Plums, but quite unlike any Plum in taste. It is full of juice, and has a partly sweet, partly acid flavour. It partakes a little of the general insipidity of the fruits in the colony, but after the first disappointment one gets used to that. It makes good jam, and capital tarts, so it deserves some praise. And the trees are always ornaments to a garden, for they retain their beautiful leaves all the year round.

The Granadilla is the fruit of a species of Passion-flower, which flourishes like a weed in Natal; but it does no harm, excepting, perhaps, as a harbourage for snakes, which are fond of curling themselves up among its thick leaves, and people need to be cautious when they are picking the fruit. The Granadilla requires support, and it very quickly finds its way from one tree to another, around which it wines, ornamenting it with its lovely starry flowers and pretty fruit. The fruit is green when young, but as it ripens, gradually changes to a deep purple. It is egg-shaped, and one cuts the top off, and eats it just as one would an egg. It is full of small seeds, pulp, and juice, and, besides being very good in its natural state, makes excellent jelly.

The Mango I think quite unpleasant, but as many people think otherwise, I must not run it down. It is like an enormous Plum, and has a taste of turpentine combined with various other flavours, and is so extremely sticky, that I have heard that in India, where it is thought a great deal of, people are in the habit of eating it in their baths, so as to get rid of the sticky effect as speedily as possible.

Pine-apples flourish abundantly on the coast; they will also grow higher up, but they do not do so well, as they require so much heat. A large quantity are brought to Maritzburg from Durban for sale, and can be bought for about fourpence each in the season. There is not much pains taken with their cultivation, and they are seldom more than half the size of those reared with so much care in our own country, and not to be compared with them in flavour. They are too much inclined to become woody and tough, but even at their worst they always seem to be appreciated, and the coolies, who are their principal vendors, find a ready sale for them.

The Cape Gooseberry is a small shrub, and bears a bright yellow berry, as unlike a Gooseberry as one thing can be unlike another. It is a wild plant, and is found all about near Maritzburg. It is a useful little fruit, and good when cooked in various ways. The Amatungula is another wild berry that is a good deal sought after; it is bright red, and is used for preserves and jelly. The jelly is not a bad imitation of red Currant.

The Papaw is a large round fruit, that grows on the coast; it is chiefly useful for cooking purposes, and from its flavour and colour might very well pass for an Apple.

The Fig tree does well in Natal, and no doubt, if the birds would only allow the Figs to ripen, they would be very good; but though we had several large-sized trees in our garden, I cannot say that we ever had the satisfaction of eating a single Fig off them; the birds gobbled them all up when they were only half-grown.

Grapes answer very well against a wall. But let me warn anyone against trying to make them grow out in a field. Preparing the ground for them—for it must be properly prepared—is a great expense, and they do not do well at all. Some people have fancied that they might be cultivated in that way, as they are at Cape Town, but it is not possible, owing to the seasons in Natal and at the Cape being quite different. The rainy season comes just at the wrong time for Grapes in Natal. We tried the experiment, and fancied we were going to make a heap of money by it, but it proved a complete failure. And we gave our Vines every chance. We got several hundred plants of different kinds; and had a Swiss gardener, who professed to know his work, to look after them, but all to no purpose. The heavy rains came, and beat down some of our poor Vines, and washed others out of the ground, and the hot winds frizzled up the rest, very few of which escaped, and I do not think even those will ever bear any Grapes. And I should be afraid to say what, with the gardener's wages and Kaffirs' labour, and the plants, our unlucky venture cost us. I asked an old experienced gardener about it, and he said he did not believe Grapes could ever be grown in Natal, without a good wall to support them. Then they do very well, grow to a large size, and are of fine flavour. But as houses are usually low, it is not so easy to get a good wall.

The Prickly Pear, the fruit of a Cactus, is watery, somewhat tasteless, but not unpleasant. It is extremely unpleasant to pick though, as it is covered all over with minute thorns, which get into one's hands. The only way to get at the Pears comfortably is to take a knife and fork and cut them off into a basket. The Cactus is almost a weed in the colony, and makes a very secure hedge, as cattle are afraid to jump through it on account of the prickles.

There are Peaches in great abundance, but they are not satisfactory. They suffer from the heavy rains which come in the summer, just when they ought to be ripening, and want most sun, so that they really have no chance, and they drop down or are blown off the trees in a green state, in which they are only fit for pigs. Some of the early white Peaches ripen, and are not bad, but the commoner yellow kinds seldom come to perfection, and Nectarines and Apricots fail from the same cause. I believe it is from Peaches that a spirit called Cape smoke is made, which I should think is only second to Natal rum in its injurious effects; but it is popular on account of its cheapness and intoxicating qualities.

Pomegranates are gorgeous in colour and pretty in form. I have seen a whole orchard of them, and they certainly made a splendid show. But I think their good qualities end with their handsome appearance; they are full of tasteless seeds, and have scarcely any juice.

Of all English fruits in Natal the Raspberry seems to succeed the best; it often surpasses ours at home. As much cannot be said of Strawberries. The heavy summer rains wash all the taste out of them, and beat them into the ground, so that in eating a Strawberry one is apt to swallow as much of one's mother earth as Strawberry.

Apples of a common, useful sort are plentiful; but I have never seen any very fine kinds grown in Natal, but I should think there is no reason against their doing well.

The Mulberry is a stunted sort of tree, with far smaller leaves and smaller fruit than that which we are accustomed to see in England; it is sweeter and not unlike our Blackberry, and is used for jam and tarts. I never heard of any Plum or Cherry being grown in the colony. I suppose the climate is unsuited to them. The Olive does well, and I am surprised it is not more cultivated, as it is profitable; I believe it is rather trying to the patience, as it is some years before an Olive bears, but when it does, it is a small fortune to its owner. A colonist in Natal has no excuse for being without a good kitchen garden. With the exception of a few drawbacks everything favours him. The soil is exceedingly productive in most parts, and there is generally plenty of means of irrigation; of course of the greatest importance in the dry winter weather. The first thing to be done is to make a good fence; and I have been told there is none equal to a hedge planted with Cactus or Aloes, and, if possible, a deep ditch on the wrong side. That seems the greatest protection against that plague of all gardeners, the oxen, which are allowed to roam about the veldt at will. Most English vegetables, as well as Potatoes, Peas, and French Beans, are equal to those at home; and if the matter of irrigation be accomplished—not difficult where there are so many streams at hand—anyone may have a succession of these vegetables all the year round. No homestead ought to be without a good garden. Industry alone is wanted, and I fear that is very much wanted in Natal; for good gardeners are few and far between. And in the whole of the town of Maritzburg there is only one greengrocer's shop, which of course cannot supply the demand, and exorbitant prices are asked for its mouldy little heap of Potatoes and flabby vegetables or fruits displayed in the dust-covered windows. Carrots also do well, and grow to a very respectable size; indeed, I have seen some not unworthy of our shows in England.

Turnips are apt to fail, and at their best are never quite satisfactory. Cabbages, Cauliflowers, and Spinach are excellent; of the latter there is a wild kind, just as pleasant as the cultivated sort.

Beetroot grows to perfection; but I cannot make out that that very useful root Mangold wurzel cannot be grown, though one would think it had very much the same nature as the Beetroot.

Cotton, Coffee, and even Tea, grow in Natal. I am not able to give any sufficiently exact information on the subject. Cotton does best on the coast, as it requires a good deal of warmth. Coffee also seems to prefer a tropical climate, though it will grow near Maritzburg. Tea does not seem to have been turned to much account; I have only seen a few bushes of it. I suppose there is some difficulty in its preparation, and therefore it is not cultivated to any extent.

American Hazel Nuts.—Corylus americana, or the American Hazel Nut, is very common in Western America, and, unlike the other species, seems to only thrive permanently in the open ground. It is said to be of a better flavour than the Filbert, and varies enough in size and quality to suggest the desirability of attempting its improvement. C. rostrater, the beaked Hazel Nut, is found generally in the Northern States, but extends down the Atlantic coast as far south, we believe, as the Carolinas. We do not know that it is found in the north-west. It is lower and stronger than our common Hazel bush, and has the "hulls" curiously twisted about the Nut, whence its name. It grows from 2 to 5 ft. in height.

A New Measuring Instrument.—The Boston correspondent of the "Academy" says:—"May I mention an ingenious instrument which I had the pleasure of seeing the other evening, and hearing explained by its inventor, Mr. Edward C. Pickering, Professor of Physics in the Massachusetts Institute of Technology? It is designed for measuring the distances and heights of mountains. It consists of a common telescope, with a level attached, a scale of equal parts in the eyepiece, and with a mirror of plate-glass fastened to the object, so that it can be set to any angle. Two images are seen, one through the glass, and the other by reflection from its surface, and any two objects may be made apparently to coincide by turning the mirror through the proper angle. Selecting as one object the mountain the distance of which is to be measured, and as the other any convenient, well-defined point, the telescope is moved through a known distance, and the apparent change of position of the two images is measured by the scale. From this the distance may be determined with all the accuracy needed for an ordinary map. It is, in fact, equivalent to the "stadia," with the advantage that an assistant need not be sent up the mountain, for it can be measured with the same accuracy and precision as with a pole 100 ft. or 1000 ft. long. The altitude is then determined by levelling the telescope and reading the apparent elevation from the graduated scale which is now turned round. By a second inclined level, higher mountains may be measured. It will probably equal in accuracy a large theodolite, without the necessity of employing a finely graduated circle or delicate mounting. It is therefore inexpensive, light, and easily used. It could be carried by any traveller, and would give the height of a mountain much more accurately than a barometer. Further, a whole range of mountains might be measured in a few hours by this instrument, while with the barometer a single ascent often occupies several days."

Submergence of Trees.—In past ages the Yorkshire moors were covered with woods and forests equally with the Lancashire moors, as the remains of large trees have been frequently disinterred on the moors. One such discovery was made during the last autumn on the hills lying to the north-west of the town of Holmfirth, close to the well-known Ford Moor. The trees were found during the formation of the Upperthong Reservoir (at present in course of construction), which lies in a shallow depression between two long ridges of lower coal shales. The reservoir is dug out of a deposit of no great depth, which principally consists of clay and black boggy peat, both lying on coal-measure shales. The excavation, when we saw it, was about 200 yards long by 70 yards broad. This area contained the prostrate trunks and upright boles of about thirty large trees, which had had the black peat removed from them, but were otherwise undisturbed. Some of these trunks are 30 ft. long, and of good girth at the upper part, showing the age of the trees to be not less than half a century. The wood was black and soft, but perfectly sound at the heart. The trunks, which were clearly identified, were those of Oaks, Beeches, and Birches, the latter predominating. The course of events appeared to lead to a conclusion somewhat like this:—At one time, in past ages, on the hills about Harden Moss, clumps of large Oaks, Beeches, and Birches grew in vigorous health. Suddenly, by some catastrophe, the trees were broken off near their roots, and fell prostrate where they are now found. The drainage from Harden Moss soon after was stopped and converted the place into a swampy bog. Peat was then formed and enveloped the trees, and the whole became hard and dry. After a time a small lake was formed over the peat. The water from higher ground bore fine clay and marl, and spread it over the peat to a depth of about 3 ft. Then the lake drained off, and the marshy turf grew on the clay which now forms the surface soil, an aspect being given to the shallow depression which appears to have existed from the earliest historical times.—J. Plant.

Canna liliflora.—In a late number (Nov. 1) of the "Revue Horticole," the Comte de Lambertye has given some interesting details respecting the culture of this Canna, which has become rare in collections. He has succeeded in keeping it since 1860, alternately in a temperate house in winter and in the open air in summer—from the end of May till the first week in October; and it has flowered and produced seeds year after year without any special care or treatment. The largest specimens in the possession of the Comte de Lambertye, at Chaltrait, gave the following measurements on the 27th September last:—Height from the soil to the tips of the upper leaves, about 17 feet; circumference of the clump near the ground, about 8 feet; circumference near the top, about 20 feet; number of stems, thirty; girth of one of the largest stems near the base, about 10 inches; length of the longest leaves, 3 feet 9 inches; width of the largest leaves, 20 inches. This plant flowered in June, and at the end of July it had ripened seed in abundance.

A Beautiful Country.—Bosnia is so little frequented by tourists, and so little known, that a few words about the aspect of the country and the nature of its soil may not be out of place. A few extracts from one of a series of letters addressed by the Superior of the Trappist convent near Banjaluka to a brother Trappist in the Tyrol will give some ideas on the subject. "People outside Bosnia hardly have a notion how beautiful a country it is. True, the banks of the Rhine from Bingen to Cologne, the shores of the Swiss lakes, of the Lago Maggiore, and the Lago di Como, are very fine, but if you take away from them all that has been done by the hand of man—the castles, ruins, villas, villages, towns, and vineyards—you will find that Nature unadorned has not done so much in those spots as she has for Bosnia at Iaica and Iulisar. True, again, that the views of Constantinople and Naples are magnificent; but the work of man, prolonged through ages, has its share in the beauty of those views. For my part, ever since I was a boy I have travelled all over Europe in search of beautiful scenery, but I have never found Nature in itself, without the help of man's works, so exquisite as at the Lake of Iegero and at the Iaica cataracts—far superior to the fall of the Rhine at Schaffhausen. In two words, Bosnia is like Styria or the Tyrol, only more beautiful, with grazing lands more extensive, and with a climate which allows the cultivation of almost any European produce high up on the mountain-side. There is abundance of mineral produce, which only waits for the miner; river streams on every side offer extensive water-power almost everywhere; the forests abound with costly trees. Ignorance and mismanagement alone could have allowed such riches to lie waste for so long. We (Trappists) are, I am happy to say, teaching the inhabitants little by little to realise what they possess."—"Times."

Origin and Extent of Cranberry Culture.—The future historian of Cranberry culture will revel in a richness of synonyms. On Cape Cod the grounds planted with this fruit are called yards; in the interior of Massachusetts and in Rhode Island, meadows; in Wisconsin, marshes. New Jersey men speak of Cranberry bogs and plantations. The Cranberry grows naturally on swampy lands. Its first known culture was at Dennis, on Cape Cod, about sixty years ago. Captain Henry Hall had the fruit growing wild about the margin of a pond, and to increase the fruit-bearing area, he shoveled sand from the banks into the edge of the water. The runners promptly overspread the new soil. When the shovel would not suffice, the wheelbarrow came into play, so by degrees the entire pond was filled up, and covered by runners from the marginal plants, thus constituting the first sanded Cranberry bog. It is still in good bearing. In round numbers, I think the area under Cranberry culture in New Jersey at the present time is 5000 acres; New England and New York—judging from their crops—aggregate about the same acreage. Wisconsin, Minnesota, Indiana, and Michigan, probably have 5000 acres in Cranberry plants, either partially or wholly cultivated—in all about 15,000 acres!—N. R. French.

Varieties of Tea.—Tea is a kind of Camellia, and very like a miniature copy of that well-known ornament of our greenhouses and conservatories. Then I was told the distinction between the Chinese plant and its taller relative, which is wild in Assam. Then I learned the difference between black tea and green. Both come from the same plant, but the former is fermented and the latter is unfermented. I asked about the half-fabulous teas one has heard of, which never come into the market, "tea of the Wells of the Dragon," for instance. Such things, I was told, if ever made, would be the young unexpanded leaf plucked and prepared separately. Then I asked about Flowery Pekoe, which, in my ignorance, I supposed to contain portions of the flower. Flowery Pekoe, I was told, is the very finest kind of black tea, and has its name from the soft down of the young unexpanded leaf which may be perceived upon it. A little of it is sometimes prepared separately. Orange Pekoe, which is much the same, has its name from the colour of the unexpanded leaf when dried. Its orange colour enables it to be easily distinguished and picked out. You must understand that save and except the half mythological teas I have alluded to, all black tea, from Orange Pekoe down through Pekoe and Souchong to Bohea, which last is made of the largest and oldest leaves, and all green tea, from Young Hyson down to Hysonskin, are plucked and prepared together. The sorting is an after process, done partly by sieve, partly by hand.—Grant Duff.

The Fever Gum Tree in the Roman Campagna.—In a paper read before the Pharmaceutical Society the other evening, some interesting facts relating to the influence of the Eucalyptus globulus, or Australian blue Gum tree, in a malarious district, were communicated by Mr. R. G. Glover, as having come under his observation during a recent stay in Italy. The locality chosen for the experiment was the most desolate part of the Campagna, about three miles from Rome, where tradition fixes the place of the execution of St. Paul. On that spot three magnificent churches and a monastery were erected, but towards the end of the last century they had to be abandoned by the fever-stricken monks, and the ruins had since become a show-place for visitors in the winter. About six years ago some French Trappist monks, under the superintendence of Padre Gildas and Fra Orsi, planted Eucalyptus trees in the cloisters, and they have already grown to a height of over 30 ft. During the first four years the monks did not venture to live on the spot altogether, but returned to the city to sleep every night during the summer and autumn months. For the last two years, however, all the monks have inhabited the hitherto fatal spot, the community sleeping in the monastery, and remaining day and night all the year in the most fever-stricken spot of the whole Campagna. Notwithstanding this, the monks, most of them beyond the prime of life, have existed and preserved their health. Whether this result has been due to the direct influence of the trees upon the atmosphere or the soil, or to the efficacy of a kind of liqueur which the monks prepare from the Eucalyptus and take with their cup of black coffee every morning, Mr. Glover leaves others to decide; but he is of opinion that, if the Italian Government were to turn its attention to the subject, the whole of the desolate plain might be restored to the condition in which it unquestionably was in the days of the Roman Empire.

A Step in the Right Direction.—I see, by an advertisement in The Garden, that the Wimbledon Society of Gardeners have obtained leave to meet at the Lecture Hall once a fortnight, to discuss matters relating to horticulture. This is as it should be, and puts me in mind of the days of yore when we used to meet to discuss the merits of the Pink, Auricula, Carnation, and similar florists' flowers; few at the present day are aware of the benefits derived from such meetings. If amateur cultivators would, in their respective neighbourhoods, contrive to get together such meetings, which involve no expense, they would probably learn more about matters pertaining to gardening in a year than they would otherwise in seven. Societies might be formed with no other object in view than that of periodical conversations and discussions among their members, and the interest of such conversations and discussions might be increased by the production of any plants, flowers, fruits, or vegetables that any member might have in his possession in a state fit for showing. By having the subscription to such societies on the lowest possible scale many would be able to join them, and much good would be the result.—Edwd. Bennett, *Rabley, Herts.*

Sources of Medicinal Rhubarbs.—At the garden of the Royal Botanic Society, Regent's Park, a plant of the Rheum officinale has borne ripe fruit. This plant, a native of Thibet, is the species shown by Baillon to be the source of some at least of the "Turkey" Rhubarb of commerce (see J. Bot., 1872, p. 379), and has been figured in the "Botanical Magazine" for last December (t. 6135). It is an exceedingly handsome plant when in flower, and certainly not less so in fruit. The broad wings of the triangular nuts are of a brilliantly bright red, and cordate at the base and apex, the whole fruit being nearly half an inch long, and pendulous in clusters. They are very indifferently rendered both in form and colour in the Bot. Mag. plate. Quite recently Professor Maximowicz has proved that the Rhubarb which enters Siberia by Kiachta, or "Moscow" Rhubarb, is yielded by Rheum palmatum, Linn., which was found in 1872-3 by Przewalski, on hills at Tangut, in the province of Kansu, in North-west China. This is a re-discovery, for the species was originally brought to Russia in 1750, and thence distributed to the gardens of Europe, as the undoubted source of officinal Rhubarb. There is no necessary antagonism between the statements of Baillon and Maximowicz, and it may well be that the drug is afforded by both species of Rheum.—"Journal of Botany."

NOTES AND QUESTIONS—VARIOUS.

Weymouth Pine in Wiltshire.—In the old Fir woods on this estate there are several groups of this Pine, some of the largest specimens of which measure from 80 to 90 ft. in height, and from 6 to 8 ft. in circumference of stem at 5 ft. above the ground. In this country it is inferior as a timber tree to the common Spruce and Scotch Firs.—G. B., *Longleat*.

Cockroaches and Crickets.—After repeated trials of different substances for the destruction of these, I find James's Phosphoric Paste to be the best, inasmuch as it clears them off the first night. I place two or three pieces of it, about the size of a Hazel-nut, on bits of paper, and lay it about in dry places. This paste is rather expensive and somewhat difficult to obtain.—R. H. B.

Prizes for Roses.—At the annual meeting of the Frome Rose Club, which took place the other day, it was resolved to considerably increase the amount usually given in the shape of Prizes for Roses. At the Crystal Palace £115 is given in prizes for Roses; at Oxford, £107 at the Royal Albert Hall, £126 10s.; at Birmingham, £144; and it was thought that the Frome Club ought to give £100.

Celosia pyramidalis var. Reid's Perfection.—Mr. Thompson, of Ipswich, (see p. 80), describes this as attaining a height of 2½ ft., but that is a mistake, inasmuch as it attains a height of from 4 to 5 ft., and has a diameter of from 2½ to 3 ft.; Mr. Thompson's description is otherwise perfectly correct. We grew a large number of plants of it last year; they formed a line on each side of a house 140 ft. in length, and were really magnificent, the brilliancy of their colours being perfectly dazzling.—Reid & Co., *Appley Bridge, Wigan.*

Dressing for Vermin-infested Soil.—Quicklime and soot, pointed into the ground at sowing time, half a bushel to each per 30 square yards, is a good preventive; but a better remedy is gas lime, at the rate of half-a-peck per rod, or twenty bushels per acre. The ammoniacal liquor of the gas-works, diluted with six times its volume of water, and applied to the ground with a rosed watering-pot a day previous to sowing, is also a good preventive of canker.

Hybridising Bouvardias.—Will "R. H. B.," who writes so well on Bouvardias (see p. 121) state whether B. leiantha bears male and female flowers on the same plant or not, as I have some recollection of having read (see "Social Science Review," 1872, art. "Bud variation") that it is diœcious? It may interest some to know that M. Lemoine, of Nancy, this year announces a new hybrid obtained by fertilising B. jasminiflora with pollen obtained from B. flava. It is described as having the umbellate inflorescence of the seed-parent, while the flowers are of a clear canary-yellow, and sweet-scented.—B.

Mackaya bella.—Will some correspondent kindly give me a few hints on the cultivation of the above plant? With me it grows freely in the stove or in the geenhouse, but never flowers in either.—W. W.

An Old Time Notion.—There is a popular belief here that timber cut down in the forest before full moon is sure to decay quickly. This belief extends also to the picking of fruits from trees before that time. Is there any ground for this belief? Preston Powers, *Florence.*

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> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

GESNERAS FOR THE GREENHOUSE IN WINTER.

Gesneras, though classed among stove plants, are found to be admirably suited for the winter decoration of the greenhouse, provided care be taken not to place them in draughts of cold or dry air. In a temperature ranging from 45° to 50° as a minimum, Gesneras will continue to put forth a succession of flowers, which will last much longer than if exposed to a higher temperature. The moist atmosphere and subdued light of winter suit their development, and though they may be grown for summer use, indeed, for any season of the year, they are in reality winter-blooming plants. There are many species and varieties of them well worthy of cultivation; we have tried several, and among the rest the old shrubby G. elongata, which is now very showy; but the kinds at present under notice will consist of herbaceous bulbous-rooted sorts. Of these the best are G. Cooperii, an improved variety of G. zebrina, and G. cinnabarina. These are indispensable to the conservatory, and should be grown in quantity wherever plants for table decoration are in demand. Even after they have ceased blooming, if the foliage has been preserved in health, they have beauty sufficient to cause them to be retained in the show house as decorative plants; for, besides being flowering plants of the first order, they are also fine-foliaged plants. G. zebrina splendidissima is a very robust grower, forming massive stout stems and foliage, which, when well developed, is broad and flat, showing the serratures prominently round the margin of the leaf; the colour is glossy velvety-red, with the light green colour showing through in numerous spots and patches. No foliage is more liable to injury from indifferent culture than that of the Gesnera; it quickly becomes spotted from rain or sunshine, curls inwards at the edges if it is grown in too dry an atmosphere, and loses the delicate glossy texture of the hairy surface. Gesneras are nevertheless of very easy culture, with a little intelligent care in furnishing them with these few requirements. G. Cooperi is also a very robust grower, dwarfer than the last, shorter-jointed and of a closer habit, the foliage broad and massive, and of a pale green colour, with numerous marbled spots of a lighter tint. As a flowering plant it is perhaps to be preferred to the last, as the foliage has the effect of showing up the colour of the flowers to great advantage. The gem of this genus is, without doubt, G. cinnabarina, not so robust in growth as the two last-named, still with a vigorous and free constitution, dwarf and short-jointed in habit; its great attraction is the brilliant velvety-red colour of the minute hairs on the foliage; the flowers, of a delicate orange-scarlet, are produced in profusion, and from four to six weeks in succession. G. exoniensis is a desirable variety, intermediate between zebrina and cinnabarina in habit, but much in the way of the last. G. velutina is also a dwarf variety, robust in habit, after the style of exoniensis, with its flowers of a pink colour. All Gesneras require about the same culture, and at the present time it will be necessary to preserve the foliage in health as long as possible, so as to mature the growth of the bulbs. The plants should be placed in a warm pit on a moist bottom, such as tan or leaves, and moderately watered until the foliage shows signs of decay, when water may be withheld altogether; some weeks will elapse before the plants become thoroughly dry. The pots, with the soil and bulbs, should then be stored in a shed or cellar where they will not be subjected to damp or too low a temperature, say, below 50°, for a low temperature with damp is fatal to most stove bulbs at rest. This plan is preferable to removing the bulbs from the soil and storing them in sand, besides being more natural. They may remain in the pots until they are started again into growth for the winter; to save room the pots may be piled in tiers, from which no injury will ensue. About the second week in July is a good time to start the bulbs, when they must be cleared of the old soil, and, to save space at the time, they may be placed thickly on a thin stratum of soil and covered over with the same in shallow boxes or pans and placed in heat to start; the stock can readily be increased by breaking the bulbs into two or three pieces instead of planting them singly; each piece is sure to push into growth. In a few weeks they will make their way through the soil, and, when they have made a little bunch of young roots, they should be taken from the boxes and potted, some singly into 4-in. pots, some in threes into 6-in. pots, according to the purpose for which they are intended; both sizes must ultimately be shifted into two sizes larger. To make a very large specimen six or more plants may be placed in shallow pans after the manner of Achimenes, but those grown in the smaller sizes are best, and, in fact, a very considerable specimen can be grown in an 8-in. pot; for single plants a 6-in. pot is sufficiently large, and looks better than when three or more are grown together. The soil that is generally recommended for Gesneras is an open fibrous material, enriched with decomposed horse-manure or leaf-mould; a thoroughly good fibrous peat for the staple of the soil is best, but a very fibrous light loam, with a little sand, will be found to answer as well. The pots should be carefully drained to a fourth of their depth, and when they have got well filled with roots, a regular system of watering with weak liquid manure should be commenced, taking particular care not to allow a single drop to fall on the foliage; this must specially be attended to if the plants be grown in lean-to pits and under the hand in watering; neither should the syringe ever be used overhead among Gesneras, the delicate covering of minute coloured hairs being so susceptible to injury from foreign matter in the water. The chief consideration as regards the successful culture of Gesneras is the choice of a proper place in which to grow them, so that they may enjoy the atmospheric conditions necessary to their proper development. A low lean-to pit will suit them well, in the absence of a house of larger dimensions; fire-heat is not necessary until the end of October, in fact, may be prejudicial to them if abundant moisture be not present; still, a cold pit will not suit them well, being subject to sudden changes of temperature and consequently of moisture. A pit in which early Melons have been grown on a bed of fermenting leaves, which still continues to yield a mild bottom-heat and to emit a warm moisture into the atmosphere, is just the place for them, or a half-spent tan-bed answers just as well; spread a few inches of coal ashes, or saw-dust, over the leaves or tan, on which set the pots, and keep this surface moist with the rose of a small watering pot. The lights must be shaded with canvas during bright sunshine, or a permanent shading of whitewash will answer perfectly up to October, sunshine and a dry atmosphere very quickly causing the foliage to spot and curl inwards at the edges. By the middle of October the lights should be cleared of the whitewash, and if bright weather ensue some lighter shading may be used. At no time is much ventilation required, and that only at the top of the lights. All Gesneras may be started at one time and grown on together until October. It is easy to push a quantity forward into bloom by Christmas by giving them a little extra heat in a light house; some move the plants into low span-houses in winter. Of course, fire-heat is necessary from October onwards to maintain a minimum of 50° until they have come well into bloom. Our first lot, composed entirely of G. zebrina, accompanied the early Poinsettia in December; G. Cooperi followed, and now cinnabarina and others are fast coming into bloom, and will continue for more than a month. Gesneras are readily increased by using strong leaves with the ribs cut in various places, pegged down on sand, and kept in a moist heat, when they will make little bulbs at every incision; whole leaves inserted by a short piece of the stalk in sand make the strongest bulbs, a single leaf in a 3-in. pot being the best mode. These cuttings should be made in summer, when growth is vigorous, and a close moist compartment in a pit should be devoted to them; a hand-light within a pit answers well when a quantity is to be raised, otherwise cloches can be used. Gesneras will be found to be as indispensable as Poinsettias for winter decoration; they stand the temperature of an ordinary greenhouse or conservatory better than the Poinsettia, and, on the whole, are more useful for table decoration. W. D. C.

NOTES OF THE WEEK.

—— In Mr. Hibberd's lecture on fruit culture, at the Society of Arts, there is a mistake which deserves to be pointed out, as it is published in various journals. He says:—"The various methods of pruning practised on the Continent have not in any marked degree obtained a settlement in this country, and there are two powerful impediments to the establishment here of what are especially known as French methods of pruning fruit trees. In the first place, our climate is unfavourable, because a tree several times pinched requires a long, bright, dry autumn to ripen its late-formed wood, and of that the Frenchman is fairly assured, while the Englishman is not." Now, here it is plainly seen that the writer supposes the French pinch their trees "several times," but this is not the case. The practice Mr. Hibberd refers to is English, and we have never seen an instance in which it was practised in a French garden. The French are not such novices in fruit culture as to pinch the shoots of their fruit trees several times, and thus start the young fruit-buds at the base of the current year's wood into soft woody growths, and thereby do irreparable mischief. Nor is the close pinching at three leaves, of which we have all heard, ever practised in France, in any system of pruning for fruit that we have ever seen or heard of.

—— Sir Arthur Guinness has made the Commissioners of Stephen's Green, Dublin, a free gift of £5000, to enable them to pay off their debts and convert the green into a public garden.

—— Mr. Murray has just issued the second edition of Mr. Darwin's "Animals and Plants under Domestication," a book of the highest interest for horticulturists as well as for the general reader.

—— Two writers in the "Revue Horticole" contend that the common practice of watering stove and greenhouse plants with tepid water is wrong. They consider they actually get a much better result by using the coldest water within reach.

—— Saxifraga Burseriana is, among early and Alpine flowers, the gem of the week. In habit it resembles a miniature Juniper Saxifrage, with a beautiful large white flower, out of all proportion to the diminutive plant that bears it.

—— There will be a national Horticultural Exhibition at Rome from May 6 to 14, the first of its kind, as stated in the "Bulletin" of the Royal Tuscan Horticultural Society, that has taken place in that city. There is also to be a great Horticultural Exhibition in Vienna from April 29 to May 4.

—— An acre and a half of ground will be set aside as a garden of the indigenous flowers and plants of Japan at the American Centennial Exhibition. This to horticulturists should prove a very interesting feature, if so formed as to fairly represent Japanese vegetation.

—— M. Carriere speaks very highly of a variety of the Japan Privet called Ligustrum japonicum robustum. He says that it is hardier and altogether stouter than the ordinary Japan Privet; and if this be so, it should prove a very desirable late-flowering shrub, or rather low tree, for the ordinary kind becomes a low tree in favoured spots.

—— The King of the Belgians is erecting at Laeken a grand winter garden close to the palace. It is covered with a roof about 120 ft. in height, so constructed as to need no support in the centre. Tall trees will thus have room for full development. The cost of the building is estimated at 2,000,000 fr. (£80,000).

—— One of the most effective among white-flowered Orchids is Cœlogyne cristata, a native of Northern India. Of this, a fine specimen is now in bloom in Mr. B. S. Williams' collection at Holloway. It measures upwards of a yard in diameter, and is altogether a strikingly handsome plant. A Manchester correspondent states that he has a specimen of this Orchid now bearing nine flowers on a spike, a number rarely, if ever equalled.

—— The great success of the International Potato Show held last year has led the promoters to arrange for a similar exhibition in the autumn of the present year. Arrangements have therefore been made for a second great Potato Show, to be held in the Alexandra Palace, on September 28th and 29th next. The prizes will amount to over £100, and the subscriptions are headed by one of forty guineas from the Alexandra Palace Company.

—— The stately and graceful Palm, Seaforthia elegans, is now in flower in the Royal Botanic Gardens at Glasnevin, Dublin. The specimen is a noble one, and the inflorescence bursts from the lofty stem about midway. Brownea grandiflora has been for some time in flower in the large stove at Glasnevin, and the noble tree, for such it is, of B. grandiceps, in the same house, is just now showing flower, and a magnificent display may be confidently looked for by-and-bye. These Browneas are of remarkable beauty, and deserve to be seen more frequently in our botanic gardens and large private collections.

THE INDOOR GARDEN.

COOL TREATMENT FOR FERNS.

Many so-called stove Ferns may be successfully cultivated in a greenhouse where the temperature from fire-heat alone never rises above 45°, and is often below 40°. Many years ago I was acquainted with a lady who was specially interested in the culture of Ferns. She grew them in a lean-to greenhouse, with the usual kind of stair-like stage, and a shelf all round the front and ends. In this house were many pretty little specimens of such kinds as the Bird's-nest Fern (Asplenium Nidus Avis), many varieties of Adiantum, several Gymnogrammas, Platycerium alcicorne, Pteris tricolor, and others. She admitted that with certain kinds she had some trouble before she could induce them to take kindly to her cool system of treatment. This was, in most instances, due to her buying small plants, and having no house of intermediate temperature in which to grow them for a little time after receiving them, so as gradually to acclimatize them, if I may use the term. Failure, however, usually teaches more than success, and she soon discovered that by making her purchases in August, and by buying only such plants as were thoroughly established, and in the case of any scarce kind, waiting patiently until it became plentiful, so that a good plant that had not been over-excited by forcing might be obtained, she seldom lost even a single plant. As regards treatment, they were seldom or never shaded; in sunny weather moisture was plentifully sprinkled about the stages and walls, but not much over the plants, and a free circulation of air was kept up on all favourable opportunities. All potting was done early in summer, so that the pots might be full of roots before the short days came. In winter much less water was given than in summer, but they were in no sense dried off, and of course the atmosphere was kept comparatively dry. Anyone who has anything to do with furnishing knows that the cooler plants are grown, if healthy, the better they are adapted for the purpose and the less they suffer; a remark that holds good in the case of Ferns, that may be required to be grown in a lower temperature than that to which they are usually subjected. They may, it is true, in some slight degree, lose that exuberance of growth which plants in a higher temperature may possess, and the fronds may be paler in colour; but, on the other hand, they may be moved anywhere whenever the temperature is above freezing, and may be inspected without having to endure the steaming tropical heat of a stove. Many, indeed, of our most beautiful Ferns will flourish in a comparatively low temperature; but of course plants that have been growing in warm houses must be gradually énured to a lower temperature, and, as a matter of course, less moisture will be required, and when potting—especially at first until some experience has been gained—smaller shifts should be given than under ordinary circumstances, and all potting should be done not later than June. These remarks apply not only to pot plants set on stages, but also to naturally-arranged Ferneries, in which the pots are plunged out of sight, or where the plants are grown without pots.

E. Hobday.

Of Phalænopsids, which may be ranked amongst the most beautiful of all winter-flowering Orchids, 300 or 400 are now in full flower in Messrs. Low's nursery at Clapton. Among these we may specially allude to the new and beautiful P. casta and P. leucorrhoda, and also to some distinct and richly-coloured forms of the better known P. Schilleriana, to say nothing of P. amabilis and P. rosea. These plants are growing in a span-roofed house about 60 ft. in length, to which air is freely admitted over the pipes in mild weather, and moisture at the root is liberally administered. Thus treated it is difficult to imagine a more beautiful sight than that presented by healthy and free-blooming plants like those to which we allude. Other Orchids in this collection are in the best possible health and vigour, Dendrobes, Lælias, and Saccolabiums luxuriating under the same treatment. Several plants of Dendrobium Wardianum are blooming freely, and we noticed a very brilliantly-coloured variety of D. crassinode, named Barberi, the tips of the ivory-white segments being of the most vivid magenta-purple possible. We may add that the rare and beautiful Phalænopsis intermedia Portei is now blooming freely in Lord Londesborough's collection at Surbiton.

POTTING AND PLANTING.

It would be hardly possible to over-estimate the importance of these two operations. It is, in fact, almost useless to study the requirements of the many varied forms of vegetable life in respect to light, air, moisture, &c., if the conditions necessary to a healthy and vigorous root-action do not receive due consideration. The advantage of a good start in life to a young plant is fully recognised by practical men. A Vine or fruit tree, for instance, will generally indicate by its first year's growth the degree of perfection at which it may eventually arrive. In the case of soft-wooded, quick-growing plants, the effects of judicious management in this respect will manifest themselves even more strikingly. That which retards or diminishes growth in any way must necessarily detract from the general health and vigour, and affect the future welfare and progress of the subject. It is, therefore, evident that too much care can hardly be bestowed upon all operations by which the action of the root is affected. The skilful, intelligent cultivator endeavours to preserve his plants from checks of all descriptions. He guards against extreme vicissitudes of temperature, moisture, &c., and he knows full well the vital importance of preserving in their normal state of health those organs which draw from the soil the requisite daily amount of nutriment. If the root receive an injury, the whole plant immediately feels it, and suffers in proportion to the damage inflicted. Notwithstanding, however, that these few facts are well known to, and acknowledged by, the gardening world in general, there still remains a lack of due appreciation of their importance, as is often evidenced by the want of care and reflection exercised in the details of planting and potting. A few well-grown subjects reflect more credit on the possessor than a large collection of badly-managed ones. Whether plants be grown for pleasure or profit, for the production of bloom or fruit, the effects of strict attention to a few details, which the inexperienced might regard as unimportant, will be amply rewarded. That which induces a great deal of this work to be performed in a hasty, haphazard manner, is the fact of employers oftentimes being too apt to judge of the skill and application of the workman by the amount of work got through in a day. In this respect, there is, of course, a vast amount of difference between men. Some will always excel not only in quickness of manipulation, but, at the same time, will exhibit a greater amount of care in their operations than others. There are, however, few who can combine great speed with perfection of workmanship: and, as a rule, young men should not be encouraged to aim at arriving at this point, as it is calculated to induce a hasty, superficial manner of getting through their work. In removing a tree, or re-potting a plant, we are in a manner constrained to violate the laws of Nature—we mutilate the root and check its powers for a time; but the ill-effects which, more or less, this derangement causes, may be reduced to a minimum by adopting proper precautions.

The condition and quality of the soil used must, of necessity, hold the first place in our consideration; it is, however, rather to its preparation than to its innate qualities that I would direct attention. To the cultivator the soil-yard may be said to form the basis of nearly all his proceedings; and no pains should be spared to keep up a supply of the several kinds of mould that may be considered necessary, a portion of which should always be in a fit condition for immediate use. It is not always easy to obtain the exact kinds of soil that one would like—locality and various other circumstances often influencing the supply; but, with a little management, we may always contrive to render ourselves tolerably independent in this respect. I was once placed in peculiarly unfavourable circumstances in regard to the necessary compost; I could not procure a particle of good loam, the peat was of the most wretched description, and white sand was unknown. There was, however, an immense accumulation of very old leaf-mould and manure; the collection of plants was varied, but I had fair success with them, which I attribute to having every particle of soil thoroughly dried and exposed to frost before using it. Palms, stove plants in general, and many Ferns, grew admirably in it; in fact, the free root-action and corresponding luxuriant growth of many plants, for which I had always considered the best fibry peat and silver sand indispensable adjuncts, quite surprised me: Gloxinias and Achimenes succeeded remarkably well thus treated. I may here just observe that the best-cultivated collection of Gloxinias I ever saw was potted in thoroughly decomposed manure with no other admixture. I would, therefore suggest that all soils should have careful preparation for use, more, I believe, depending upon this than upon the richness or natural suitability of the earth itself. Leaf-mould should be several years old—in fact, the older the better; and manure should never be employed unless three or four years old, and it should be well turned over as often as convenient during that time—every portion being exposed to sun, air, and frost—a strict observance of this injunction being absolutely necessary. When fit for use, it should be reduced to, and undistinguishable from, mould itself. There is, in my opinion, no greater evil than using manure in a lumpy state for potting, especially in conjunction with raw, unctuous loam. Great care must be exercised in watering, or the fibre is apt to perish, and the soil become sour, when all mechanical assistance is lost. Loam should be stacked some considerable time before being used; it cannot, of course, be turned about as in the case of leaf-mould, &c., but a portion should be well chopped and undergo a purifying process; if required in a rough state, each lump should be subjected to the sweetening action of the atmosphere. Peat should receive a similar preparation. A portion of each kind of soil employed for potting should always be kept under cover with the view of having it in good condition for use at all times when required, also that its temperature should correspond in some measure with that of the soil in which the plants are growing.

Advantage is often taken of rainy days to get through the potting work, and nothing is worse than the employment of soil in a wet, sodden state. Mould for potting should be employed in a moist, but not wet, condition; if, on compressing a handful, it does not open again freely in the hand, it is too wet; at the same time it should contain enough moisture to obviate the necessity for immediate watering. Fibres seem to be produced more readily when the earth is in a semi-moist state. If one can, in the case of newly-shifted plants, dispense with the watering-pot for twenty-four to forty-eight hours, the displaced rootlets will, in that time, strike afresh into the new soil; or oftentimes a fresh lot of young roots will, in that short space of time, be produced. The use of dry soil necessitates a heavy watering; the check and excess of moisture often cause the delicate spongioles of the fibres to decay, and a certain period must elapse before these can be replaced; the plant in the meantime suffers, or, at the least, receives such a check that it takes some time to recover. If the pots and drainage be quite dry, they should be sprinkled; in the case of new pots, it is advisable to soak them before they are drained. The inside of the pots and the crocks should be of the same degree of moisture as the compost to be used, otherwise the lower portion of the soil becomes so dry that heavy waterings are needful to moisten it properly throughout; at the same time, the interior of the pots should never be in a wet sloppy state when used, as this will cause portions of the mould to adhere to the sides, and in the next shift much valuable root will be torn away. For this reason, too, it is indispensable that all old mould should be cleared from the insides of the pots. Nothing should be shifted or planted with the ball in a dry state. Plants intended to be shifted should be well soaked some time beforehand—if in the winter time, some twelve hours before being operated on; but in dry summer weather, two or three hours will suffice to drain away the superfluous moisture. In the case of a plant that may have become pot-bound, or in any way hard in the ball, it is advisable to pierce the same with a sharp skewer, and, in placing it in the fresh pot, to allow the soil to slope a little from the edge towards the stem, forming a kind of basin around it; the water will then go where it is most required. This will also apply to planting out-of-doors, especially in the case of shrubs grown in peat, which are often lost in the moving, through the water not being able to permeate the old soil. In potting off cuttings of all descriptions, the roots should never be in a dry state when placed in the fresh soil. In planting in the open ground, much time and labour may be economised by a little extra care in this matter; transplanting may be done as well in hot weather as at any other time, and in the case of many plants, with greater assurance of success—as, for instance, in that of the Magnolia grandiflora.

Strong seedlings or cuttings that have to be transplanted in dry weather should be watered twelve hours before being moved; if then carefully taken up and immediately placed where the air cannot dry the roots, they will immediately lay hold of the ground, and one gentle watering will generally be sufficient to ensure their growth. I have found nothing better for transporting young plants in, when at this work, than a common pail; it is impervious to the external atmosphere, and, if covered with a damp cloth, will preserve them fresh for hours. This is a great advantage, as a sudden call may be often made upon men, necessitating their absence for some time. At the potting bench, it is a common custom to knock out a number of plants for cuttings at once, allowing them to remain some time fully exposed to a drying atmosphere. This is a very injurious practice, and if those who indulge in it were to study vegetable physiology even to a small extent, they would become alive to the baneful effects of this custom. Cuttings should never be allowed to become pot-bound; the stunted growth and the loss of roots which the forcible separation of the plants occasions, render them liable to the attacks of many insect enemies. The miserable, starved appearance which many soft-wooded plants assume when bedded out, may often have its origin traced to the want of timely potting off, and also to careless handling at the potting-bench. John Cornhill.

Byfleet, Surrey.

Toughened Glass for Greenhouses.—Is the glass, which I saw mentioned in The Garden some time ago as capable of withstanding considerable shocks without breaking, yet introduced for sale, and, if so, at what prices compared with those of common glass? At what prices could I get in London, ready packed, sheets of glass 14 in. by 22 in., and 14½ in. by 16½ in., the thickness being what is usually called here "half double" (about 3.32nds of an in.). I refer to sheets of common greenhouse glass.—Preston Powers, *Florence.* [The glass to which Mr. Powers refers has not yet been introduced for glazing purposes, and we do not think it likely that it ever will be. In the first place, it cannot be cut without considerable difficulty, therefore every square of the different sizes required would have to be cast separately. Ordinary 15 oz. sheet-glass may be procured at any respectable glass warehouse in London, cut to size at 3d. per foot. There is a great difference between this and the glass advertised to be sold in sizes, the latter being cut from the residue, or waste, from the sheets, and the sashes require to be made to fit such glass; while, in the former case, the glass is cut to order for glazing purposes.—I. W.]

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Roof Climbers.—When these are planted out under slate or stone stages, it should be borne in mind that they require as much moisture in winter as in summer, especially as hot pipes are frequently in close contact with their roots. —J. G.

Acacias shedding their Bloom-buds.—I have six seedlings of Acacia lophantha in pots, about six years old, and full of bloom-buds, which fall off every year about this time. What is the cause of this disaster?—E. B. [It is impossible for any one who has not seen the plants, and who knows nothing of their condition, to give a useful answer to such a question as this. It is, however, of course, owing to bad cultivation or neglect of some of the conditions necessary to the health of the plants.]

Hyacinths for Forcing.—In reference to "Chef's" remarks (see p. 150), allow me to say that early in January last I saw at Mr. Bailey's, Feltham, a fine collection of White Hyacinths, consisting of, I think, La Boule de Neige, a double kind equal in size of spike and general development to the best single varieties; and Mr. Bailey specially pointed out that owing to the massiveness and purity of the bells, they were most valuable for wiring and working in that form into bouquets.—A. D.

—— "Chef" (p. 150) is right in the main in recommending only single Hyacinths for early forcing; but he should make an exception in favour of the double white La Tour d'Auvergne, a kind which produces a fine spike and one which will force better than any, even of the single whites. I always grow it for first cutting and have it in perfection at Christmas and even before that. —Henry A. Wood, *Willow Lodge, Mitcham.*

Single White Camellias.—Can anyone inform me whether or not this beautiful old variety is now in cultivation? In the "Magazine of Gardening and Botany" (1836 p. 150), the flowers are described as pure white, and like those of the single red in shape. It is useful as a seed-producer or for crossing other kinds; some are of opinion that it was imported from China, but Messrs. Chandler & Booth believe that it was raised in the Tooting Nursery, from seed of the double-striped kind.—B.

THE FLOWER GARDEN.

THE HARDY ARUMS.

By J. C. Niven, Botanic Gardens, Hull.

Almost contemporaneously with the Primroses, and not unfrequently associated with them, do we find the shining green leaves, peering through the Moss or Ivy-clad bank, of the wild Arum, familiarly known as "Lords and Ladies" and "Cuckoo Pint." Later on, after the broadly sagittate leaves have become developed, are produced those light green sheathing processes, popularly called flowers, but botanically spathes—in fact, they constitute a gigantic protective covering or bract, from the interior of which rises a spike, and on this spike, or spadix as it is termed, are arrayed a series of very simple unisexual flowers. In a few weeks' time the inflorescence of the Arum will be fully matured, and let me ask those who wish to claim a closer acquaintance with its structural character to pluck one of the flowers and examine it. First, it will be found, as I have just said, that what we call the flower is a sort of protective hooded cloak. Now let us examine the purple-topped axis that rises in the centre and it will be found that, beneath the base of the long smooth club-shaped terminal appendage, there are three distinct circles: the lower one consists of female flowers, possessing little more than an ovary and stigma; the middle one, which is somewhat globose in shape, consists of a few male flowers of an equally simple character embedded in the fleshy substance of the spadix, and above this is a group of tubercular processes, which are looked upon as abortive female flowers; what purpose the fleshy terminal growth is intended for we have yet to learn. From this brief examination, a clue to the flowering process of all the Arums and many kindred genera will be obtained, and that all the more clearly if the investigator has a specimen of the wild "Cuckoo Pint" in his hand. Here we find no close-fitting calyx and gaily-coloured corolla, but Nature has provided in the sheathing process a perfect substitute—protective it must be admitted to be, but it is more: it has the power of generating heat similar to that possessed by the parti-coloured corolla. This peculiarity in the flowering process was not alluded to in Mr. Bennett's admirable lecture on Fertilisation (see p. 87). I may, therefore, briefly state that the essential difference between the ordinary green leaves and the highly-coloured floral leaves of a plant consists in the fact that, whereas the former decompose carbonic acid and return oxygen to the atmosphere, the latter absorb oxygen and exhale carbonic acid; and in this process, as a matter of course, heat is generated; the plant, in fact, in flowering burns a portion of its own carbon and creates heat, the highest temperature being attained just as the anthers are ready to burst; thus we have a further and additional attraction to insect life—besides colour, odour, and nectariferous glands, we have the warmer temperature. This slight digression might at first sight be supposed to require some apology; but, when I say that the most successful experiments and the clearest proof yet adduced as to the heat-generating power of flowers were based on a series of observations made on several species of Arum and afterwards on other flowers, it will at once be admitted that it is not so foreign to our subject as might have been supposed. I have myself observed a difference of 11° between the external and internal temperature of the Arum Dracunculus; but Vrolik, manipulating with more delicate instruments than mine, has recorded much more marked differences, extending to even 30°.

But, to return to our wild Arums, let us extend our investigations below the ground, and we shall find that the leaves and flower-spike rise from a very short underground stem, solid in texture, called a corm; these succulent processes ordinarily called roots, prior to the development of the spring growth, are charged with rich amylaceous matter, associated with a highly acrid and poisonous principle, which latter is dissipated in the process of drying. The farinaceous matter thus obtained becomes an article of commerce under the title of Portland Sago, for the manufacture of which the corms are largely collected in the south of England; and we may here remark that in Mexico, South America, India, and, indeed throughout the tropics, where corms of an enormous size are developed, they constitute an important article of food, the poisonous principle in all cases being dissipated either by pressure or by heat. I have already spoken of the broadly sagittate character of the leaves of our native plant (Arum maculatum) taking it as typical of the genus, or at least of a special section of it; closely related to it comes Arum Arisarum of the south of Europe and A. azoricum of the Azores; in both of these species the dark blotches, which give rise to the specific name of our British plant, are absent; the lobes of the leaves are more rounded, the terminal or fleshy portion of the spadix is cylindrical not club-shaped, and the spathe is broader, bluntly pointed, and cucullate.

Arum italicum (the Italian Arum), with sagittate leaves similar to the preceding species, is of much larger growth; the principal veins are blotched with yellow, giving the leaves a marbled appearance, and as they are produced very early in the season, attaining their full development in the month of March, they form an attractive feature in the flower border. The spathe is yellowish-green in colour, fully 4 in. across—in fact, twice the size of that of our wild plant, the fleshy termination of the spadix being of a creamy-white colour. In the autumn, when the leaves have died away, the groups of scarlet berries, supported on foot-stalks 10 or 12 in. long, have a very attractive appearance, which they retain for a considerable time. It is a native of Spain, Portugal, Italy, and the south of France. Occasionally we meet in our own woods with a very similar variegated form of A. maculatum, but it is smaller in every respect than its Italian relative, which is a decidedly desirable plant for cultivation.

The Italian Arum (A. italicum).

A. Dracunculus (the Snake-stemmed Arum) attains a height, when growing vigorously, of from 2 to 3 ft.; the leaves are large, pedately divided; the petioles, sheathing round the stem, are, as well as the stem itself, of a fleshy colour, deeply and irregularly mottled with black, reminding one of the skin of a snake, whence originates its popular name of the Snake Plant; the spathe is of a deep chocolate colour, ovately-acuminate in shape, fully 8 in. across, quite smooth; the spadix is tapering, not clavate. At certain stages of floral development, a most disagreeable odour is given out by this plant, reminding one of decomposing animal matter; the emission of this odour appears to be quite spasmodic, as, at one time, it may be sufficiently powerful to cause nausea, and in a few minutes every trace of it will have disappeared. This species is a native of southern Europe, and forms a handsome and desirable border plant, so unique in its appearance as to attract the attention of even the most casual observer. It grows freely in any ordinary rich garden soil.

The Snake Plant (A. Dracunculus).

A. Dracontium (the Green Dragon Arum of the Southern States of America) grows abundantly in the moist and swampy districts of Virginia and New England. Its pedately-divided leaves are elevated on foot-stalks to a height of 18 to 24 in.; these, as well as the veins of the leaves, are tinted with a deep purple; the leaflets are oblong-lanceolate and entire, the graceful curving of the veins, which is noticeable in all the species belonging to this section, adding a special charm to the appearance of the plant; the spathe is greenish-coloured, trumpet-shaped below, with a slightly hooded limb; the termination of the spadix is extended into a long gradually narrowing point exceeding the spathe in length. This handsome species is rarely met with in cultivation.

A. crinitum (the Hairy Arum) is a native of Minorca and the island of Lavezzi, situate between Corsica and Sardinia, in the former of which it is also met with, though not so abundantly. It is decidedly the most remarkable of all the hardy species, approaching more nearly to the Amorphophallus of Mexico and South America than any other; indeed, I am not quite clear whether it ought not more correctly to be referred to that genus. The leaves attain a height of from 18 in. to 2 ft.; they are erect, smooth, and shining, pedate in form, but with this peculiarity, that whereas the primary divisions are three in number, they are supplemented by two spur-like lobes at the base, which are each again divided into three distinct divisions; the foot-stalks are dilated into a sheathing-like process, marked with black spots at the lower part; the spathe is supported on a stout foot-stalk, which rises direct from the corm, somewhat antecedent to the full development of the leaves, and is mottled over with black blotches; it is tubular below, green-coloured and somewhat ventricose, bending at right angles just before it expands into the broadly-ovate, purplish-chocolate limb, which is fully 9 in. across by nearly 12 in. in length, the whole of the interior being lined with numerous dark-coloured, slightly adpressed hairs. The usually smooth, fleshy termination to the spadix is, in this case, covered with tubercular processes, each terminated by a slightly fleshy attenuated hair. In this species the carrion-like smell I alluded to as spasmodically occurring in the last becomes strongly and continuously pronounced, and doubtless gave rise to Linnæus' old name of A. muscivorum, the smell being sufficiently strong to attract the larger flies in quest of a suitable place wherein to deposit their eggs. It is further said that the arrangement of the hairs at the somewhat contracted neck is such, that like Avernus, whereas the descent is easy the ascent is impracticable, and hence our hairy Arum ought to take its position amongst the so-called carnivorous plants that have of late excited so much interest.

The Hairy Arum (A. crinitum.)

A. tenuifolium, A. gramineum, and **A. spirale** are three species that form a group by themselves. The first is an Italian plant, the second North African, and the third a native of China. All have narrow, Grass-like leaves, with parallel venation; the flowers are not by any means showy, nor do I deem it necessary to record more than their names, as forming a very distinct section of the genus.

A. triphyllum (the three-leaved Arum) is a native of North America, and may be taken as typical of a distinct section of the genus in which the leaves are divided into separate lobes. Here, as the name indicates, they are three in number, each lobe being broadly obovate, slightly undulate at the margin, with a sort of irregular parallelism in the venation; the spathe is trumpet-shaped below, the limb terminated by an acute point, which gracefully bends downwards over the mouth, and is of a purplish colour; the terminal portion of the spadix is club-shaped and deep purple. Much handsomer than the original species is the striped variety known as A. triphyllum zebrinum; in it the purple colour is clearly defined into stripes, alternating with white. Neither of these plants is as frequently met with in cultivation as it ought to be; the latter is really handsome, and I believe they are both sufficiently hardy to stand our climate, at least they are uninjured in a cold frame. The want of duplicate plants has prevented me from putting their real hardiness to a practical test.

Closely allied to the Arums is the genus Amorphophallus; possibly the species A. Rivieri from Mexico may not be sufficiently hardy to stand our winters, but certainly it would form a very valuable plant as a central object for a small bed in the flower garden. It sends up a stout, mottled foot-stalk to a height of from 2 to 3 ft., which expands at the top into a much divided umbrella-like leaf some 2 ft. in diameter, reminding one of a miniature Palm tree. Its use in the flower garden would combine beauty with novelty, and as such I would recommend its culture to those who are in quest of plants possessing those essential qualifications.

GARDEN VEGETATION IN JANUARY, 1876.*

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

The weather at Edinburgh during the month of January has been, upon the whole, favourable; no snow fell, although several severe snow-storms were experienced in various parts of England and in many places in the North of Scotland. On twelve mornings only was the thermometer at or below the freezing point, indicating collectively 103°, the lowest being on the mornings of the 9th, 10th, 12th, 13th, 21st, and 22nd, when 17°, 18°, 25°, 25°, 21°, and 17° were respectively indicated, while the highest morning temperatures were on the 5th, 6th, 20th, 24th, 27th, and 31st, when 41°, 40°, 40°, 41°, 42°, and 42° were indicated. During January, 1875, the thermometer was thirteen times at or below the freezing point, indicating collectively 87°. The following Table shows the amount of frost that occurred during the months of January for the last thirteen years:—

1864	394°	1868	75°	1871	168	1874	35
1865	104°	1869	37°	1872	42°	1875	87°
1866	40°	1870	76°	1873	63	1876	103
1867	210°						

This season, upon the whole, is rather in advance of the average, particularly as regards herbaceous vegetation, and certain shrubby plants. The following is the order in which those early spring plants, selected 26 years ago, for annually recording their time of flowering, came into bloom, the same plant or plants growing in similar situations being selected, so as better to compare with previous and future years:—

	1876.	1875.
Tussilago fragrans	January 12	January 18
Hepatica triloba	,, 12	,, 21
Corylus Avellana	,, 14	,, 15
Galanthus nivalis	,, 16	,, 18
Leucojum vernum	,, 18	,, 21
Crocus susianus	,, 20	,, 23
Rhododendron atrovirens	,, 25	February 4
Eranthis hyemalis	,, 26	January 30
Daphne Mezereum	,, 26	February 4
Crocus vernus, and vars.	,, 28	,, 10
Galanthus plicatus	,, 29	,, 3

On the rock-garden thirty-five species and varieties were counted in flower on the 31st of January, the most conspicuous being nine species of Helleborus, Hepaticas of various colours, Leucojum vernum, Crocus Imperati, Primula denticulata, Erica herbacea alba, Daphne Mezereum, pink and white, Cyclamen ibericum, and Eranthis hyemalis. Flowers were also to be seen on Sternbergia lutea, Veronica rupestris, and Lithospermum fruticosum. The comparatively mild weather, so far, has brought rapidly forward the leaf-buds of many shrubby plants, particularly those of Roses, Scarlet-flowering Currants, Cydonia japonica, Nuttallia cerasiformis—a Californian shrub—Lilacs, &c. Flowers are also to be seen on the Hazel, Alder, Rhododendron atrovirens, Garrya elliptica, Cornus mascula, Jasminum nudiflorum, &c. Among the herbaceous plants which show the greatest amount of growth at the present time is the Elymus condensatus (Californian Bunch Grass). The young shoots of this, on the 31st of January, averaged fully 8 in. in length; the growths on the Day Lily (Hemerocallis fulva) were 6 in. long at the same time. The buds of several trees are also observed to be swelling fast. The quantity of catkins and flowers being produced on the Birch and Elm gives a very dark appearance to the tops of these trees. At the present time plants of Thuja aurea and T. elegantissima have parted with the brown hue usually assumed by these shrubs during the month of September. They are now (31st January) as green as they were before the brown tints commenced, and are progressing towards their usual summer golden tint. These transitions are taking place earlier this season than usual, probably owing to the brown colour not being so strong on them as is sometimes the case during more severe winters. The Cryptomeria elegans is also parting with its beautiful reddish winter tinge, and is now about half green; the same remarks also apply to many other Conifers, kinds which usually assume a brown hue during winter, but which regain their usual bright green colour during summer. The golden Stonecrop (Sedum acre aureum), which becomes golden during spring and summer, is still green, except in the case of a few pieces which hang down the faces of the rock-work stones, where they are fully exposed to the sun. Snowdrops are now flowering freely on all Grass lawns having a southern aspect, while those on northern slopes will be about ten days later. The Grass lawns are the only situations in the garden where their flowering can be annually depended on; when grown in borders the roots are either destroyed by mice or dug over in preparing the ground for summer flowering plants.

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* Read before the Botanical Society of Edinburgh, Feb. 10th, 1876.

THE VERBENA AS A HARDY ANNUAL.

In the cultivation of the Verbena as a hardy annual, glass structures and fire-heat are quite unnecessary, and the amateur without any glass whatever may have beds of Verbena quite equal to those in gardens in which ample accommodation is provided. The seed must be sown early, and in the beds in which the plants are to remain throughout the season. It should be sown at the beginning of March. Some time beforehand dress the beds with suitable manure and dig them up to a fair depth, for a deep and moderately rich soil is most essential to the production of a fine display of flowers throughout the summer. The surface soil will require to be broken rather fine, in the same manner as for Mignonette or other annuals sown in spring; after the sowing has been made the surface should be raked over lightly to cover the seed with soil. The young plants will make their appearance all over the beds by the end of April, and from the first will grow with great vigour, commence to bloom very early, and continue in flower until quite late in the autumn. If any thinning be necessary it should be done before the plants suffer from overcrowding, but there should be no hurry to remove the plants when they are of a small size. The seedlings will vary more or less in colour; the mixture of colours will produce a most pleasing effect, and the perfume will be most delightful, for nearly every light flower will be as sweetly scented as the blossom of the Honeysuckle. To ensure a thoroughly good display, seed saved from flowers of first-class quality must be sown, and therefore, in purchasing, care must be taken to obtain seed from a strain of Verbenas known to be good. Where the beds are required to be filled with any one particular colour the stock must be raised from cuttings, but unless they form part of a geometrical scheme mixed beds have certainly the most attractive appearance.—Henry Eckford, in "Gardeners' Magazine." [The above excellent suggestion is well worth carrying out. Verbenas when growing well and free from disease are so beautiful that one cannot but regret the way in which they have disappeared from flower gardens during the past few years. Beds of good mixed Verbenas are among the loveliest in the choicest garden, and Mr. Eckford's plan not only points out how to raise them more simply and inexpensively than of old, but also how to secure a much more free and beautiful growth and one more free from insect-pests.]

THE FRAXINELLAS.

These charming old plants belong to the Natural Order of Rutaceæ, and the name Fraxinella is derived from a supposed resemblance of the foliage to that of the Fraxinus or Ash. They are fine old denizens of the mixed flower garden, and have held their position for a number of years; and such is their stately beauty, that they are not likely to be driven out by the multitude of new plants with which our flower-borders are from time to time replenished. Had I room to grow but half-a-dozen hardy plants, one should be a Fraxinella; and those who have seen an old-established plant of this genus, with a dozen spikes of its white or lilac flowers, will not easily forget its striking appearance. The plant is not particular as to soil, but a moist strong soil, in a somewhat shady place, suits it best. It is easily increased by seeds, which, however, must be sown as soon as gathered, as not one in a hundred will grow if kept over till the following spring. The whole secret of cultivating these fine old plants is to leave them alone; in fact, a root of it has been known to stand on the same place for fifty years, the stem still bearing healthy blooms. The flowers, when rubbed, yield a scent like Lemons. There are about four known species; but only two are met with in general cultivation, F. Dictamnus (white) and the common Fraxinella (lilac). They are natives of the south of Europe. It is to be regretted that these fine and long-enduring plants should be so scarce in the gardens of the present day.

Bath Lodge, Ormskirk. Thos. Williams.

The Fraxinella.

SPRING FLOWERS.

Snowdrops.—Galanthus Elwesii, of which Mr. Elwes kindly gave me three bulbs last year, is now in bloom, as are also G. plicatus and Imperati, and the double form of G. nivalis; I have them all before me on the table as I write. The single form of G. nivalis will not be out here for several days; G. Elwesii took the lead by at least a week; G. Imperati was the next to put in an appearance, and this was closely followed by G. plicatus. These last two are very much alike—at least, if I have got the true Imperati; I can detect little difference between them, unless it be that Imperati has a more slender flower-stalk, longer and narrower petals, and a more elongated ovary than G. plicatus. G. Elwesii resembles G. plicatus in leaf and G. nivalis in flower. Two or three years ago Herr Max Leichtlin sent me a fifth Snowdrop under the name of G. Redoutei, but the bulb was weak, and has never yet bloomed, though it now looks healthy and strong. Paxton, in his "Botanical Dictionary," gives another species under the name of G. reflexus, introduced in 1856, the flowers of which are said to be green, but no one seems to know anything about it. G. plicatus is very impatient of removal; the clumps ought not to be touched more than once in five or six years.

Crocuses.—Crocus Olivieri, aureus, mæsiacus, biflorus, biflorus argenteus, Imperati dalmaticus, Weldeni, minimus, susianus, Sieberi, lævigatus, and chrysanthus are now, or have been in bloom during the last few days in the open ground or in pots in a cold frame. I have bloomed a single bulb each of what Mr. Baker considers to be varieties of C. chrysanthus; one has the outside of the three outer petals clouded all over with black (I call it nigrescens); the other has the same, three petals flushed with rich purple and distinctly striped as in C. susianus, in fact, till I looked at the corm, I thought it was that species. They were both found by Mr. Elwes in Asia Minor. From the same source I have flowered two bulbs of what Mr. Baker considers to be a variety of C. Weldeni. If so, it is a very remarkable one. The flower is even smaller than that of C. pusillus, in fact, the smallest Crocus I have yet seen; it is pure white, except that the outer side of the outside petals is clouded with black as in the nigrescent variety of C. chrysanthus. From Berlin I have a beautiful variety of C. dalmaticus. The outer side of its three outside petals is a rich blue purple, the inside and the whole of the three inner petals being pure white. When I can increase my one bulb into a clump, it will be strikingly effective. I am raising all the Croci I can from seed. It, however, requires patience, as the seedlings are three years, and sometimes more before they bloom, but it is a sure way of increasing rare species, and there is always the chance of raising a beautiful variety. I have now pots of seed of C. minimus, aureus medius, biflorus argenteus and minimus, Weldeni and its varieties, albus and dalmaticus, lineatus, odorus (longiflorus), lævigatus, Kotschyanus, Byzantinus, vernus leucostigma, Imperati, and speciosus. They should be protected from violent rain. I lost a potful of strong seedlings of C. medius and Byzantinus last autumn from leaving them out in the wet. Does any one cultivate Crocus sulphureus albidus? I have only a couple of very weak bulbs, and should be most grateful to any one who would exchange it for other species.

Christmas Roses.—We all owe a deep debt of gratitude to Miss Hope for the kind way in which she has distributed her fine Helleborus maximus or abchasicus, whichever it is. A plant which she was kind enough to give me when I visited Wardie Lodge in September, is now finely in bloom. It is a very fine species, totally distinct from H. niger. Its long reddish stigmas, to mention nothing else, at once distinguish it from that species. H. niger angustifolius, atrorubens, niger (type), purpurascens, orientalis, and fœtidus, are also in bloom.

Miscellaneous Early Flowering Plants.—Tulipa Greigi, with its spotted leaves, is coming up strongly; as are also T. Oculus solis, fulgens, elegans, retroflexa, fragrans, Hageri, Julia, Celsiana, cornuta, Fransoniana, maculata, sylvestris, Biebersteiniana, undulatifolia, præcox, turcica, Gesneriana, suaveolens, &c. Tulipa tricolor which I have had for several years, is showing bloom for the first time. Muscari Szovitzianum is almost in bloom, and M. Heldreichi is close behind it. Xiphion Histrio, Colchicum luteum, Leucocrinum montanum, Merendera Aitchisoni and caucasica, are all peeping, and will, I trust, soon double and treble their at present single blessedness. H. Harpur Crewe.

Drayton-Beauchamp Rectory, Tring.

A Misnamed Primrose.—"V.'s" criticism (see p. 165), in reference to the so-called Primula altaica, is somewhat unjust; I wrote (see p. 122) "respecting the pretty mauve-coloured Primrose, commonly known as P. altaica," but I did not say that altaica was its proper name; indeed, I have known for some time that the Primula called altaica was not that species. It should have occurred to "V," however, that until Mr. Niven gave it a correct designation, no one knew what to call it; also that Mr. Turner had said that it was the same as the variety which he sent out twenty years ago as P. altaica; owing to its having been long known in the trade and also exhibited as altaica, I was, I think, justified in saying that "it was commonly known by that name." I trust that, in future, all will remember that it is P. vulgaris grandiflora. I may add, that it is unfortunate that the real P. altaica does not seem to be forthcoming, as a sight of it just now would be specially interesting.—A. D.

A New Clianthus.—Clianthus Dampieri, Deutsch Flagge or German Flag, was, says the "Hamburger Garteneitung," as translated in the "Gardeners' Chronicle," raised by L. Vieweg, of Wegleben, near Quedlinburg, from seed; and he has now, after three years' trial, found it to be constant from seed. Instead of the scarlet with a black boss of the typical C. Dampieri, this variety represents the German national colours—black, white, and red. The upper part of the flower is of a fiery scarlet, the centre is a glossy, deep, bluish-black, and the keel is pure white, with a sharply-defined red margin on the lower side. The separate flowers measure 3½ in. and upwards in length, and are borne in clusters of four to seven together. In habit it agrees exactly with the ordinary C. Dampieri, and it is an exceedingly free bloomer. Treated as an annual it is one of the most effective outdoor plants we have. The writer of this notice counted from 200 to 260 expanded flowers on each plant, at the beginning of August, in his garden. Its culture is of the simplest kind, and it by no means requires the nursing some people imagine. Although it flowers so freely it ripens comparatively little seed.

Hellebores from Seed.—A few weeks ago there was a good deal of controversy as to whether or not seed could be got from the Hellebore or Christmas Rose. Allow me to say that I have a fine bed of it now in full flower, all the plants in which were raised by myself from a purple or plum-coloured kind; these seedlings show three or more varieties of colour, and all of them have stems from 12 to 15 in. in height, the tops of which are covered with foliage, and each bear from five to six flowers.—Richard Webb, *Calcot, Reading.*

Branches of Evergreens in Flower-beds.—I have lately seen these used in flower-beds, and with good effect. They consisted of Hollies, Yews, and similar evergreens placed with the cut ends in the ground so as to cover the soil. Small beds with Silver and Golden Hollies in the centre, edged with bands of Ivy, had a pretty effect; others, filled chiefly with common Yew and edged with the golden variety, looked equally well, and other arrangements might be made with Aucubas, berried twigs of Cotoneaster, little bits of the beautiful variegated Euonymus, and pieces of other plants. In ordinarily mild winters, or in sheltered situations, branches such as those just named, with their ends in the damp soil, retain their freshness for months, and no one could distinguish them from rooted plants. There may be no need to fill up large flower-gardens in this manner, but the appearance of small empty beds near windows might be improved by being filled with evergreens.—M.

Select Carnations and Picotees.—The following is a list of Carnations and Picotees, 12 of each, all of which I *know* to be among the best that are grown. I have endeavoured to make, as nearly as I can, an equal selection of new and old varieties—the new being, of course, the most expensive:—Carnations: *Scarlet Bizarres*—Dreadnought, Mars (Hextall). *Crimson Bizarres*—Eccentric Jack, Isaac Wilkinson. *Pink and Purple Bizarres*—James Taylor, Purity. *Purple Flakes*—Doctor Foster, Florence Nightingale. *Scarlet Flakes*—Annihilator, Mr. Battersby. *Rose Flakes*—Mrs. Frederick Burnaby, Sybil. Picotees (those marked H are heavy-edged; L, light-edged; M, medium edge): *Red-edged*—Forester (H), Miss Small (H), Miss Turner (M), Mrs. Keynes (M). *Purple-edged*—Admiration (H), Mary (L), Mrs. Little (L), Picco (H). *Rose and Scarlet-edged*—Ethel (M), Gem of Roses (H), Mrs. Fordham (M), Purity (H). *Yellow Ground Picotees*—Prince of Orange.—T. F. B. A.

Primula cortusoides.—I find what I take to be a form of this old Siberian plant, figured and described in the "Magazine of Botany and Gardening" (1836, p. 142), under the name of P. Pallasiana. The figure is interesting as representing an intermediate state between P. cortusoides and the variety known as P. amœna, which Mr. Niven (see p. 107) thinks worthy of specific honours. The flowers are more rosy in colour, and appear larger on account of the lobes being more rounded and shallow than in the normal plant (see Bot. Mag., t. 399). In the Bot. Mag. illustration, the upper part of the scape is shown as smooth, but in the other engraving mentioned above it is decidedly hairy throughout its entire length. It is now well known to horticulturists that many of the plants introduced by us from Japan, and described as species, are merely cultural forms of plants long ago introduced by the Japanese from other parts of Asia and America, and of which doubtless, as suggested by Mr. Niven, this Primula and its sportive forms are examples.—B.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Purple-leaved Nut. Allow me to endorse Mr. Muir's remarks (see p. 152) respecting this Nut, the leaves of which are more than double the size of those of the Purple Beech. It makes an effective plant in shrubberies.—R. Greenfield, *Priory Gardens, Warwick.*

Transmission of Cuttings (see p. 87).—Where cuttings of tender plants have to be carried in the hand or pocket, the best plan is to place them in a small empty flower-pot, and wrap it up in paper. A large quantity of them may be put into a 3-in. pot, in which they do not get crushed as they do when tied up in paper. Small quantities of choice flowers may also be safely carried in the same way.—J. Muir.

Autumn-struck Alternantheras Best.—Allow me to supplement the note on Alternantheras (see p. 150) by saying that old plants lifted from the beds in autumn never winter so satisfactorily or are so good to propagate from in the spring as cuttings struck in September. As a rule, old plants run to flower in the spring, and are then comparatively worthless for propagating purposes, but not one in a thousand of young plants manifests any tendency to bloom.—W. W. H.

THE LIBRARY.

ANGOLA AND THE RIVER CONGO.*

This interesting work, the result of many years of travel and exploration, gives a vivid and intelligent account of the country which it describes—a country peculiarly interesting to horticulturists. The author does not profess to be a botanist in any sense, and yet there are many observations on vegetation in the book of much interest. The country is rich in plants, but has some of its surface as barren as many of those dreary-looking tracts which figure so often in our illustrated journals. The coast line for example, consists of level sandy bays, fringed by belts of Mangrove, alternating with long stretches of cliffs covered with a coarse branching Eragrostis, tall Cactus-like Euphorbias, and gigantic Baobabs, covered with long Gourd-like fruits. At some distance from the sea, however, very different scenes occur.

"I may state," says the author, "that from the River Congo to Mossamedes no dense forest is seen from the sea, and from thence not a single tree, it is said, for hundreds of miles to the Orange River. A little Mangrove, lining the insignificant rivers and low places in their vicinity, is all that varies the open scrub, of which the giant Adansonias and Euphorbias have taken, as it were, exclusive possession. Nowhere on the coast is seen more than an indication of the wonderful vegetation, or varied beauty and fertility, which generally begins at a distance of from 30 to 60 miles inland. At this distance, a ridge or hilly range runs along the whole length of Angola, forming the first elevation; a second elevation succeeds it at about an equal distance; and a third, at perhaps twice the distance again, lands us on the central high plateau of Africa. From the few and insignificant streams traversing Angola to the coast, which at most only reach sufficiently far inland to have their source at this third elevation or central plateau, it would seem that a great central depression or fall drains the waters of that part of Africa in either an easterly or southerly direction. I think it is very doubtful whether the Congo, with its vast body of water and rapid current, drains any large extent of country in an easterly direction to the interior, beyond the first rapids. The successive elevations inland, to which I have alluded, are accompanied by very remarkable changes in the character of the vegetation covering the surface of the country. These are due, I believe, as Dr. Welwitsch has pointed out, to the difference of elevation alone, irrespective of its geological formation. A sketch of the vegetation of the country traversed by the road from Ambriz to Bembe, where is situated a wonderful deposit of malachite—a distance of about 120 miles E.N.E.—will give an idea of the general character of the change observed in travelling towards the interior of Angola. For about 25 miles from Ambriz the vegetation is, as already described, principally composed of enormous Baobabs, Euphorbias, a tall Agave (or Aloe), a tree called "Muxixe" by the natives, bearing curious seed-pods (Sterculia tomentosa), a few small slender creepers, great abundance of the Sanseviera Angolensis in the thickets of prickly bushes, and coarse, short, tufty Grasses—the branching Grass being only found near the coast for a few miles. The country is pretty level, dry and stony, of weathered large-grained gneiss. At Matuta the scene suddenly and magically changes, and in so striking a manner as to impress even the most unobservant traveller. The Baobabs become much fewer in number, the Agaves, the Sanseviera, the Euphorbias, suddenly and almost completely disappear, as also do most of the prickly shrubs, the fine trailing and creeping plants, the Muxixe, and several other trees, and a number of smaller plants. A new set of larger, shadier trees and shrubs take their place, the Grass becomes tall and broad-leaved, and one seems to be travelling in an entirely new country. This character is preserved for another stretch of road till Quiballa is reached, about 60 miles from the coast, where the rise in level is more marked; and again the vegetation changes almost as remarkably as at Matuta, where, however, the difference in altitude is not so sudden, but a gradual rise is noticed all the way from Ambriz. Creepers of all kinds, attaining a gigantic size, here almost monopolise the vegetation, clasping round the biggest trees, and covering them with a mass of foliage and flower, and forming most exquisite festoons and curtains as they web, as it were, one tree to another in their embrace. No words can describe the luxuriance of these tree creepers, particularly in the vicinity of the shallow rivers and rivulets of the interior. Several trees together, covered from top to bottom with a rich mantle of the India-rubber creeper (Landolphia florida ?), with bright, large dark-green leaves, somewhat resembling those of the Magnolia, thickly studded with large bunches of purest white Jasmine-like flowers, loading the air for a considerable distance with its powerful Bitter Almond perfume, and attracting a cloud of buzzing insects, form altogether a sight not easily forgotten. Once at Bembe I saw a perfect wall or curtain formed by a most delicate creeper, hung from top to bottom with bottle-brush-like flowers about 3 in. long;—but the grandest view presented to my eyes was in the Pungo Andongo range, where the bottom of a narrow valley, for quite half a mile in length, was filled, as they all are in the interior, by a dense forest of high trees; the creepers, in search of light, had pierced through and spread on the top, where their stems and leaves had become woven and matted into a thick carpet, on which their flowers were produced in such profusion that hardly a leaf was visible, but only one long sea of beautiful purple, like a glacier of colour—filling the valley, and set in the frame of green of the luxuriant Grass-covered hill-sides. I have seen the surface of a large pool of water thickly covered with a layer of purple Pea-shaped flowers, fallen from the large Wistaria-like bunches of blossom of a creeper overgrowing a mass of trees standing at the edge; it seemed as if Nature, loth that so much beauty should fade quickly, had kept for some time longer the fallen flowers fresh and lovely on the cool still water of the shady lake. This abundance of creeping plants is more or less preserved till at about 60 miles farther inland we arrive at Bembe and the comparatively level country stretching away to the interior; the Oil Palm (Elæis Guineensis) then becomes again abundant, these trees being only found on the coast in any number in the vicinity of the rivers; the beautiful feathery Papyrus also again covers the lagoons and wet places. The comparatively short and spare, thin-leaved, and delicate-tufted Grasses of the first or littoral region are succeeded in the second, as I have already said, by much stronger kinds, attaining an extraordinary development in the highest or third region. Gigantic Grasses from 5 to much as 16 ft. high, growing luxuriantly, cover densely the vast plains and tracts of country in these two regions where tree vegetation is scarce. The edges of the blades of most of these tall Grasses are so stiff and finely and strongly serrated as to be quite sharp, and if passed quickly over the skin will cause a deep cut, as clean as if done with a knife; one species is called by the natives "Capim de faca" in Portuguese, or "Knife Grass," from the manner in which it cuts if handled, or in going through it. To anyone accustomed to Grass only a few inches high, the dimensions that these species attain are simply incredible. Like snow and ice in northern latitudes, Grasses in interior tropical Africa for some six months in the year take undisputed possession of the country and actually interrupt all communication in many places.

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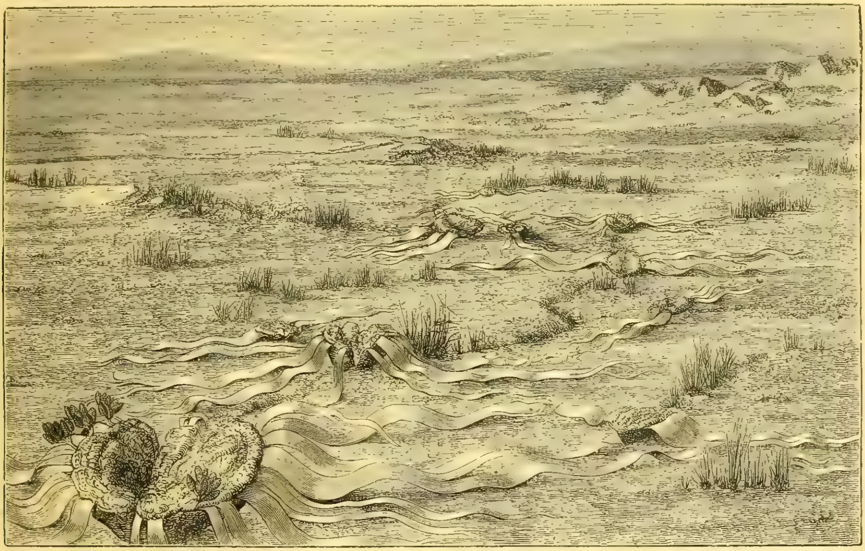
* "Angola and the River Congo." By Joachim John Monteiro. With Illustrations. 2 vols. Macmillan & Co., London.



Welwitschia plants in Angola (see p. 178).

It will be seen from the above that Mr. Monteiro has the power of describing what he sees more than most of the writers of books of travel. We have not had the advantage of seeing aspects of vegetation in Africa; but, from analogy with what we have observed in other countries, the sketch of the gradually rising hills and changing vegetation seems singularly happy. The book is not confined to general descriptions, but tells how the author has enriched our gardens with at least one good plant.

Camoensia maxima.—At Quiballa we were fortunate enough to obtain flowers and ripe seeds of the beautiful plant named Camoensia maxima by its discoverer, Dr. Welwitsch. We saw it growing along the sides of the road as soon as we left the gneiss formation and entered on the mica slate, but most abundantly in the more bare places on the sides of the hills at Quiballa, in the very hard clay of the decomposed mica slate. The Camoensia maxima grows as a hard, woody bush, with rather straggling long branches covered with fine large leaves, and bearing bunches of flowers, the lower, and by far the largest petal of which is shaped like a shell of a delicate creamy-white, with its edges exquisitely crimped, bordered with a golden rim, and nearly the size of an open hand. Its shoots spread underground to great distances and shoot out into other plants, so that on attempting to remove what we thought nice small plants, we always came on great thick roots which we followed and found to proceed from old bushes at a considerable distance. Several small plants that we brought away alive died subsequently at Ambriz. Half-a-dozen of the seeds germinated on arrival at Kew Gardens, so that I hope this lovely flower will be shortly in cultivation—a welcome addition to our hot-houses. All the plants that we collected and dried are deposited in the herbarium at Kew Gardens.

Palms, Baobabs, and Birds.—Beyond Muxima the river becomes really charming. A panorama of mile after mile of the most beautiful dark forest of high feathery-topped oil Palms stretches on both sides, but principally on the north bank. Under the shade of these Palms is seen a succession of picturesque huts, in every variety of unsymmetrical quaintness, of weathered Grass roofs, mud walls and whitewash, and crooked doors and windows. Many of these huts are embosomed in a fence of growing Hog-plum stakes, and surrounded by a thicket of Lime and Orange trees, Plantains, Papaws, &c., the luxuriant and ever bright green foliage contrasting beautifully with the sombre almost black hue and shade of the Palms. Where there are no Palm trees the vegetation is equally lovely, a profusion of creepers festooning and covering the highest trees. Amongst these the Cotton-wood trees and giant Baobabs are the most conspicuous, their sparsely-covered branches generally crowded with hundreds of long-legged herons and other birds. One of these vast trees with but few leaves, and the branches thickly covered with lines of long-legged and long-necked grey or white birds standing bolt upright, has a most extraordinary and unexpected appearance. The Palm forests resound with the cooing of innumerable doves, and are a favourite haunt of a white-headed eagle or vulture, complained of by the natives for the havoc that it commits on the Palm Nuts, on which it is said chiefly to subsist. The Palm tree is also the favourite resort of several species of the beautiful little nectarinæ or sun-birds, who appear to find on the crown and leaves the small spiders and other insects that constitute their principal food. They are always especially busy about the gourds placed at the tops of the trees for the purpose of collecting the Palm wine; whether it is that they are fond of the juice, or whether this attracts the insect prey they are in search of, I know not. Palm trees standing alone generally have as many as a hundred or more of the pretty nests, made by a species of weaver-bird, suspended from the leaflets. These birds are very noisy, and take not the least notice of the people passing beneath—in fact, they seem to prefer building their nests in solitary Palms in the middle of a native town. The natives never think of molesting small birds, and the children have not the propensity for stone-throwing or bird-nesting that our more civilised boys have.

Vegetables and Fruits.—The soil about Bembe is very productive. Sugar cane grows to a large size, and vegetables flourish admirably. Greens of all kinds and Cabbages grow beautifully, although the latter seldom form a hard head; all kinds of salad grow equally well, such as Endive, Lettuce, Radishes, Mustard and Cress, &c.; Peas, Turnips, Carrots, Mint, and Parsley also flourish, and Tomatoes, larger than I ever saw them even in Spain and Portugal. Cucumbers, Melons, and Vegetable Marrows, we obtained very fine the first season, but the succeeding year a swarm of very small grasshoppers prevented us from getting a single one. Broad Beans, although growing and flowering luxuriantly, never produced pods. It is almost impossible to estimate the advantage, in a country and climate like Africa, of an abundant supply of fresh salad and vegetables, and yet, although growing so luxuriantly, and with so small an amount of trouble, they are never cultivated by the natives of any part of Angola, and rarely by the Portuguese; the market at Loanda, for instance, is very badly supplied with vegetables.

Benguella and Mossamedes—particularly the latter—are the only exceptions to the general and stupid want of attention to the cultivation of vegetables. The only vegetable introduced by the former missionaries that still exists in cultivation in the country is the Cabbage, which is sometimes seen in the towns (generally as a single plant only), growing with a thick stem, which is kept closely cropped of leaves, and as much as 4 or 5 ft. high, surrounded by a fence to keep the goats and sheep from browsing on it, but I have never seen it in their plantations. Bananas or Plantains grow magnificently, as might be expected, and without requiring the least trouble. They are principally grown in valleys and other places, where the rich, moist earth in which they delight is found, and where, protected by Palm and other trees, they rear their magnificent leaves unbroken by a breath of air. A grove of Banana trees thus growing luxuriantly in a forest clearing is one of the most beautiful sights in Nature;—the vast leaves, reflecting the rays of the hot sun from their bright-green surface, contrast vividly with the dark-hued foliage of the trees around, and show off the whorls of flowers with their fleshy, metallic, purple-red envelopes and the great bunches of green and ripe yellow fruit. Numbers of butterflies flit about the cool stems and moist earth, whilst the abundant flowers are surrounded by a busy crowd of bees and other flies, and by lovely sunbirds that, poised on the wing in the air, insert their long curved beaks into the petals in search of the small insects and perhaps honey that constitute their food. The negroes of Angola always eats the Banana raw, but it is roasted by the whites when green, when it becomes quite dry and a good substitute for bread, or boiled, to eat with meat instead of Potatoes; and when ripe, roasted whole, or cut lengthways into thin slices and fried in batter and eaten with a little sugar and cinnamon or wine, forming a delicious dish for dessert. A very large Plantain, growing as long as 18 or 20 in., is cultivated in the interior, and is brought down to the coast by the "Zombos" with their caravans of ivory. Indian Corn is the only other plant that is grown and used as food by the negroes of Angola, with the exception of the Ground Nut. It is sparingly cultivated, though bearing most productively, and is eaten in the green state, raw or roasted, and sometimes boiled. About Loanda the dry grain is occasionally pounded into meal and boiled into a stiff paste with water, and eaten in the same manner as the "infundi" from the Mandioca root. Other edible plants, though not much cultivated by the natives, are the Sweet Potato; the common Yam (which is very rarely seen and I am quite unable to give a reason for its not being more commonly cultivated); the Cajanus indicus, a shrub bearing yellow Pea-like flowers and a pod with a kind of flat Pea, which is very good eating when young and green; the purple Egg-plant, or "Berenjela" of the Portuguese; the "ngilló" (Solanum sp.), bearing a round Apple-like fruit, used as a vegetable; the ordinary Pumpkin, and a small Gourd; and, lastly, the "Quiavo" or "Quingombó" (Abelmoschus esculentus) of the Brazilians.

Garlic I consider a most valuable article of food in a hot climate, especially eaten raw. I never travelled without a supply of Garlic, and I found its beneficial effects on the stomach and system most marked. When very hungry and fatigued I have found nothing to equal a few pieces of raw Garlic, eaten with a crust of bread or a biscuit, for producing a few minutes after a delightful sensation of repose, and that feeling of the stomach being ready to receive food, generally absent when excessive emptiness or exhaustion is the case.

Welwitschia and Cotton-wood Trees.—About Mossamedes that most singular plant the Welwitschia mirabilis is found growing, and the country about the River San Nicolau, or 14° S. lat., seems to be its northern limit. It has been found south, in Damara Land. I was fortunate enough to be able to collect specimens of the plant, flowers, and cones for Dr. Hooker, which supplied some of the materials for his splendid monograph on this wonderful plant. These specimens are now preserved in the Kew Museum. At Cazengo I saw the largest trees I have ever seen, and conspicuous amongst these was the Cotton-wood tree (Eriodendron anfractuosum), towering to an immense height straight as an arrow, without the slightest break, to the small branches at the very top covered with feathery-looking foliage, and studded with puffy balls like white silk, from the burst seed-pods. The stems and branches are thickly studded with hard, short, conical, sharp-pointed spikes, and at the base of the stem vast flattened buttresses project, which give a wonderful idea of strength and stability. Coffee is found growing wild in these virgin forests, but it is confidently believed to have been originally introduced by the old missionaries, and since been spread by the agency of monkeys and birds. At Bruto there is a fine lagoon in which abundance of fish is netted, and there are some lovely woods and valleys. A little bay in the river near Bruto was covered with the leaves and flowers of the Water Lily (Nymphæa dentata and stellata), and trailing on these were long stems of a plant many yards in length, covered with bright green leaves and lovely purple bell-shaped flowers. About Bembe a handsome creeper (Mucuna pruriens), with leaves like those of a Scarlet Runner, and bearing large, long bunches of dark maroon Bean-like flowers, grows very abundantly. The flowers are succeeded by crooked pods covered with fine hairs (cow-itch) which cause the most horrible itching when rubbed on the skin. The first time I pulled off a bunch of the pods I shook some of the hairs over my hand and face, and the sensation was alarming, like being suddenly stung all over with a Nettle.

The book is full of interest, and we can confidently recommend it to all who are interested in the vegetation, fauna, and general characteristics of the part of Africa to which it refers.

Experiences of an English Buyer of Land in France.*—This is a curious pamphlet explaining the difficulties, extortions, and annoyances to which an Englishman purchasing a small property in the south of France was subjected by his neighbours, lawyers, and others. It is of interest to such as contemplate settling in the Mediterranean regions of France.

Warne's Victoria Toy Books.†—This is a very praiseworthy little series of publications by the Messrs. Warne. There are twelve distinct and well illustrated little books, each devoted to the illustration and description of a separate branch of the Animal Kingdom, and united in one wrapper. The illustrations are well designed and delicately coloured. An edition of 100,000 copies of this series has recently been printed. It is one of the most interesting examples of modern colour-printing, and is a credit to the spirited publishers who have produced it

Standard Measurement.—The Warden of the Standards has, it appears made arrangements for laying down on the north side of Trafalgar Square, a legal standard of the surveyor's chain, 66 ft., and of the builder's chain, 100 ft., and for fixing the mural standards at the same site.

* Ridgway, Piccadilly.

† Warne, Bedford Street, Covent Garden.

TREES AND SHRUBS.

EVERGREEN BANKS.

A Laurel bank is a common feature in most gardens, and a commendable one it is, for it is often practicable to cover a slope with shrubs where Grass would not grow, or perhaps would not be desirable. The formation of such a bank is a simple matter; it is only necessary to plant thickly enough, and afterwards to keep the shrubs at the desired height by regular pruning. Sometimes, however, such plantations are allowed to grow as they please, and in a few years they become an irregular thicket, and the question arises how to deal with them. The process is a summary one, and consists in cutting the trees down to the desired level; if there be blanks to fill up, a ready way of doing so is to saw the tall limbs of the nearest trees half through or more near the ground and bend them down, pegging their points well into the ground with strong pegs. There is no danger of these broken limbs dying if a little bit of wood and bark be left at the cut, and they will soon root at the peg, and a fresh and vigorous growth of young shoots will push from the limb along its entire length. We have seen acres of Portugal and common Laurels operated upon in this way with perfect success. Shrubberies of Laurel, which have got too high and lanky, in any situation, may be restored in this way, unless the trees are very old or feeble. The Laurel is not, however, the only eligible plant for covering banks; and, among others, must be named the Ivy, which makes an excellent covering, thriving in any aspect, and growing on places where the soil is too thin or too poor to sustain a good Grass turf, or even on bare rock. It should be planted pretty thickly at first, and trained over the surface to be covered for the first season; afterwards it will take care of itself, but it should be cut in close to the ground every spring with a pair of shears in order to keep an even surface. Nothing makes a denser or a greener sheet than Ivy so treated, and if the soil be not too rich the leaves will not get very large; they look best when numerous and small. The great thing is to clip it well in. We have seen it shorn bare to the naked wood annually for many years with great advantage, and if the operation be performed about the beginning of April it will not be long leafless, for it then breaks into leaf immediately. Another plant adapted to our purpose is the Cotoneaster microphylla; its pretty and numerous white flowers, its dark geen shining foliage, and in autumn and winter its never-failing crop of red berries, render it a general favourite for walls, and it does equally well, or better, trained on the ground. It should be pegged close to the ground, and, when it has covered the allotted space, the more it is cut with the shears the denser it will grow. The young growths will require to be cut back once or twice during the summer, taking care not to damage the berries, which will then be coming to maturity. Clipping, if done with ordinary care, will not hinder it from flowering and fruiting freely, but rather promote a bearing habit, as the topping of the young growths has the same effect upon it as summer pinching has upon fruit trees. We have this plant upon a wall here, nearly as dense as a carpet, and not above 1½ in. deep, and at present so thickly studded with its beautiful berries that you can hardly insert your fingers anywhere without touching them, notwithstanding that the birds have had their share during the winter. Hardly less suited for banks than the above, is the evergreen scarlet-berried Cratægus Pyracantha, succeeding with much the same treatment as the Cotoneaster, and growing much faster, but not bearing its bright scarlet berries in such profusion until it gets a few years old. Pinching, however, and a not over-rich soil, will promote early fertility, and when it does bear freely there is no winter-berried plant which is so effective, for it is nearly as bright as a scarlet Pelargonium. Next to these comes the popular Laurustinus, second to none as a flowering evergreen; it is also an accommodating subject, and will grow easily enough if clipped; but not to lose the flowers, and yet to keep an even surface, it should be pruned just after flowering, and at no other period, otherwise the little terminal trusses will not have time to form before winter; of course straggling shoots may be cut out at any time. Among other less suitable evergreens are Berberis Darwinii and others, the Boxwood, Pernettya mucronata, and perhaps a few others. Indeed, any evergreens that will bear clipping may be employed; but we have named the best. Any of the above may be used either singly or in combination; for example, each kind may be planted in lines, beginning with the most robust growing at the back, and terminating with the dwarfer species in front. The Ivy may be used in the shade, where neither Grass nor the other shrubs will thrive, unless, perhaps the Cotoneaster, which does tolerably well in the shade, though it grows more straggling. Last, but not least, says a writer in the "Field," from which these remarks are taken, we had nearly forgotten the Aucuba japonica, which is one of the best subjects to deal with; but it must be pruned with the knife, and not clipped.

Effect of Gas on Tree Roots.—Mr. J. Bernhard Smith brings us ("Field") a portion of the root of a tree to show the effect of the escape of gas from the mains into the soil. It is part of a root of a tree dug up in Piccadilly, in order to plant a young tree in place of one that has died. Some fresh mould was put into the hole, and another young tree planted. The wood is quite fœtid from being saturated with gas, and well shows the way in which London soil is poisoned for tree life.

Poisoned by Evergreens.—An extraordinary case of vegetable poisoning has been investigated by Mr. Dunstan, coroner, at the Parkside Asylum, Macclesfield. Emma Linnell, who had been a patient in the asylum since last June, became suddenly ill, and died apparently in an epileptic fit. A post-mortem examination was held, and about a teaspoonful of green fluid was found in the stomach, with some Holly seed. There were also some Yew leaves, which had been in the stomach only a short time, and fragments of either Laurel or Holly leaves. A verdict in accordance with the evidence was returned, Dr. Deas saying this was the first case of the sort in his experience.

The Bay and Arbutus in Greece.—Laurus nobilis was, in ancient times consecrated to Apollo, hence it is called Laurus Apollonis. This handsome tree is met with in the forests of Greece, and is extensively cultivated in the gardens of cloisters. The seeds of this tree resemble those of the Olive, known here by the name of Daphnekoukou. The seeds could be utilized for obtaining the highly aromatic fixed oil, which I (a Greek writer in the "Pharmaceutical Journal") have often expressed, and consider more aromatic than the oil obtained from the Bay raised in other localities. It seems as if in warmer climates the aromatic principles of plants were more profusely developed, like the bitter and astringent principles in colder regions. Arbutus Unedo is a beautiful tree found in all the forests of Greece, and an ornament of the Oriental gardens. The excellent fruit of this tree resembles a large Strawberry, and is collected by the poor and sold during the winter; it has a pleasant taste, but in large quantities it is apt to produce indigestion. In some parts of the country a spirituous liquor, called Paki, is obtained from the fruit by fermentation.

Berry-bearing Aucubas.—All your correspondents seem to have overlooked the important fact that male and female Aucubas rarely happen to be in bloom at the same time when planted side by side in the open air, and this appears to me to be the chief reason why the males are so generally grown in pots, and either forced in heat or retarded, as the exigencies of the case may require, since the success of fertilisation, of course, depends on the two sexes being in bloom at the same time; should the male plants bloom first, the pollen can be preserved in clean paper for a week or two until the female bushes are in flower. It may interest some of your readers to know that about an equal proportion of male and female plants results from a batch of seed or berries; but, as pointed out some time ago by M. Carrière, there is often a difference of from one to two months between the blooming of male and female plants thus raised; hence, it follows that budding, grafting, and even planting male and female bushes side by side are not always successful in producing proper fertilisation, although some instances of such may be noted. It seems to me that there are both early and late flowering male as well as female Aucubas, and this may explain the different accounts given by various cultivators. It is possible that in some cases the early flowering habit of the male plants may have been caused by several years of culture in a greenhouse temperature.—B.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Fruit of Euonymus.—Of all berry-bearing shrubs none excels the Euonymus, sometimes called Burning-bush, and Strawberry-bush, with its brilliant scarlet seed covers. When associated with evergreens, nothing can be more striking than its beauty and brilliancy.—J. J. Thomas.

The Fever Gum Tree in Derbyshire.—I have two plants of Eucalyptus globulus in large pots about 10 ft. in height, and about eight years old. What would be best to do with them? They are too large for house room. Would they succeed planted out in the open ground?—E. B. [Not in Derbyshire, we fear, except perhaps on a conservative wall and protected in winter.]

The Winter Honeysuckle (Lonicera fragrantissima).—This is a good companion for Chimonanthus fragrans and Jasminum nudiflorum, on walls, flowering, as it does, in the open air in mid-winter, and continuing for many weeks to afford a supply of its fragrant blossoms. In mild districts it will thrive on sunny banks in good open soil.—B.

Large Plank of Cypress Wood.—A timber merchant in New Orleans has, I read, on exhibition a Cypress board from Alabama, which is 13 ft. long, 53½ in. wide and 2 in. thick, and is without knot or split. The tree from which the timber was taken must have measured at least 7 ft. in diameter. I suppose this to be the deciduous Cypress?—T. G. E.

PLATE VIII.

EARLY ASCOT FRONTIGNAN GRAPE.

Drawn by H. HYDE.

It has been the fashion of recent days, before offering to the public a new variety of any kind of fruit, to obtain for it a first-class certificate from the Royal Horticultural Society. It is not too much to say that these certificates are sometimes calculated to mislead. A few Committee men meet at South Kensington to pass judgment on the selections sent for their approval; and it is possible that the presence of some of the growers adds zest to the meeting. A number of fine specimens await their decision: how delicate is the soft bloom on the Grapes! how rich and luscious the taste! how fine the berries! A certificate cannot surely be refused to such a specimen! it will be a great gain to the pomologist. And so the new comer goes out into the world, sponsored and praised by men, who, after all, know little or nothing of its real merits. "All is not gold that glitters" is true of fruits. Many a grower has found to his cost that he has been deceived by a high-sounding name, and that many of the qualities for which the new Grape has been hastily commended, are entirely absent, or only to be brought out under exceptionally favourable circumstances. Grapes like these are not suitable for general cultivation; their constitution is too fragile—their crops too uncertain for any growers but those to whom time, expense, and trouble are of no importance. "I chose my wife," said the Vicar of Wakefield, "as she did her wedding gown; not for a fine glossy surface, but for such qualities as would wear well." Let me not, however, be supposed to undervalue the approval of the Committee in question. I merely complain that they pass judgment upon the fruits submitted to their notice without subjecting them to sufficiently searching tests. It is surely not enough to grant a certificate after seeing and tasting a specimen grown for exhibition under the most favourable circumstances, with every advantage of soil and climate—the Committee should have had the opportunity of becoming personally acquainted with the plant, its growth, and peculiarities.

There are fruits, "to fortune and to fame unknown," outside the pale of the Royal Horticultural Society, which yet have some title to the favourable consideration of growers, and it is to one of these that I would direct the attention of your readers. The annexed plate represents the Early Ascot Frontignan, a Grape which has never been advertised, and is little known to the public, but which I believe to be a valuable contribution to every Grape-grower's collection. It is remarkably early; when grown under the same conditions as the Black Hamburgh, it ripens fully a month earlier than that variety. It is suitable for pot culture in an early vinery, and does well on a wall in the open air. The bunches are moderately large, slightly shouldered; the berries round, medium sized, and of a clear amber colour; the flesh tender, extremely sweet and luscious, with a fine Frontignan flavour. It is a hybrid raised by the late Mr. Standish, of Ascot, by fertilising the Muscat Blanc de Saumur with the Chasselas Musqué. It is truly a summer Grape, deriving its precocity and fruitfulness from the first-named parent, its flavour and constitution from the latter. The scion has well repaid the skill of the careful cultivator.

And here let me pay a passing tribute to the memory of John Standish, a man whose name is foremost among the practical horticulturists of our day, and one who has accomplished so much in the art to which the latter part of his life was dedicated. Some twelve years ago he removed from Bagshot to a nursery on a more extended scale at Ascot, and there devoted most of his time, and the valuable experience he had gained by years of study, to the improvement of our fruits and flowers. In this he was most successful, especially in raising new varieties of Rhododendrons, Garden Peas, Strawberries, Peaches, and Grapes. The Early Ascot Frontignan, and its companion the Royal Ascot, the black offspring of two white parents (the Bowood Muscat and Trouvéren), and itself remarkable as an early useful Grape, remain lasting monuments of his ability and skill. An accomplished hybridiser, Mr. Standish did not, however, confine himself to practice, but kept careful records of his experience for the benefit of those who shall hereafter tread in his steps. The papers from his pen, which appeared from time to time in the leading horticultural journals, bear witness to his talents, improved by habits of study and observation.

The best White Grapes.

It is somewhat difficult to make a selection from the great number of White Grapes now in cultivation, much depending upon the conditions under which they are to be grown. It is not to be expected that a Sweetwater or a Muscadine can bear comparison with Muscat of Alexandria, yet each Grape has its own peculiar advantages. In a small collection, where there is no provision made for great or continuous heating of the vinery, those marked with an asterisk (*) in the early part of the following list are most suitable. These, however, are not good after October. The remainder come in afterwards, require more heat, and remain in perfection for some months longer. As a rule, all late Grapes require more artificial heat to ripen them properly than early ones. The nature of soil and varying modes of treatment have an important influence in determining the peculiar form of the Grape; sometimes the same Grape has several different synonyms, but the following are the generally recognised names:

* **Early Ascot Frontignan.**—One of the best and earliest of White Grapes; it is fully described above. This Vine, though very little known to gardeners generally, has shown that its produce is very valuable. To prove it, canes were distributed by the late Mr. Standish among his friends, but, unfortunately, after his death no record could be found of their names. His surviving partner (Mr. Ashby) would be extremely obliged if those who have canes would communicate with him on the subject.

* **Royal Muscadine.**—Bunches, long, loose, and shouldered; berries, large and round; skin, thin and transparent, greenish-yellow, and when quite ripe pale amber sometimes marked with tracings of russet, covered with a thin white bloom; flesh, tender and juicy, sweet, and richly flavoured. This excellent Grape will ripen in a cold Vinery and against a wall in the open air, and is easily cultivated. It is grown under a variety of names, such as the Chasselas de Fontainebleau, White Muscadine, Early Chasselas, &c. The various forms it frequently assumes are occasioned entirely by the nature of the soil and the different modes of treatment to which it is subjected.

* **Chaptal.**—Bunches larger than those of the Royal Muscadine; berries large and round, inclining to oval; skin, white, and when quite ripe, transparent; flesh, juicy and sweet. This new Grape is of excellent quality, and well adapted for a cool vinery. The Vine is a free and prolific bearer. It is also suitable for pot culture.

Duke of Buccleuch.—Bunches, large, ovate, from 8 to 10 in. long with large broad shoulders; berries, enormously large; skin, thin, of a rich amber colour, when fully ripe; flesh, tender, juicy, and pleasant. This is comparatively a new Grape, and is the largest-berried white variety we have. It and its companion, the Golden Champion, succeed well with the same treatment as the Black Hamburgh.

* **Golden Queen.**—Bunches, 9 in. long, with a stout stalk, long, tapering, and well shouldered; berry stalks, rather long; berries, oblong or oval; skin, of a clear amber or golden colour; flesh, firm, very juicy, and richly flavoured. This fine new Grape has an excellent hardy constitution, and will be very popular when it is better known.

* **Foster's White Seedling.**—Bunches, large, and well set; berries, rather large, roundish-oval; skin, greenish-yellow, becoming clear amber when ripe; flesh, tender, melting, very juicy, sweet, and richly flavoured. A fine showy Grape, of first-rate quality. It ripens at the same time as the Royal Muscadine, and is considered by some growers to be superior to it. It succeeds well for early forcing.

Muscat of Alexandria.—Bunches large, long, loose, and shouldered; stalk long; berries large, oval, and unequal in size; skin thick, generally a greenish yellow, but when highly ripened a fine pale amber colour, covered with a thin white bloom; flesh firm, not very juicy, but exceedingly sweet and rich, with a fine Muscat flavour. This is the most useful of all the white Muscats, and bears a more certain and regular crop. It is a most delicious Grape, requiring a high temperature to ripen it thoroughly. The Vine is an abundant bearer, but the bunches often set badly. To remedy

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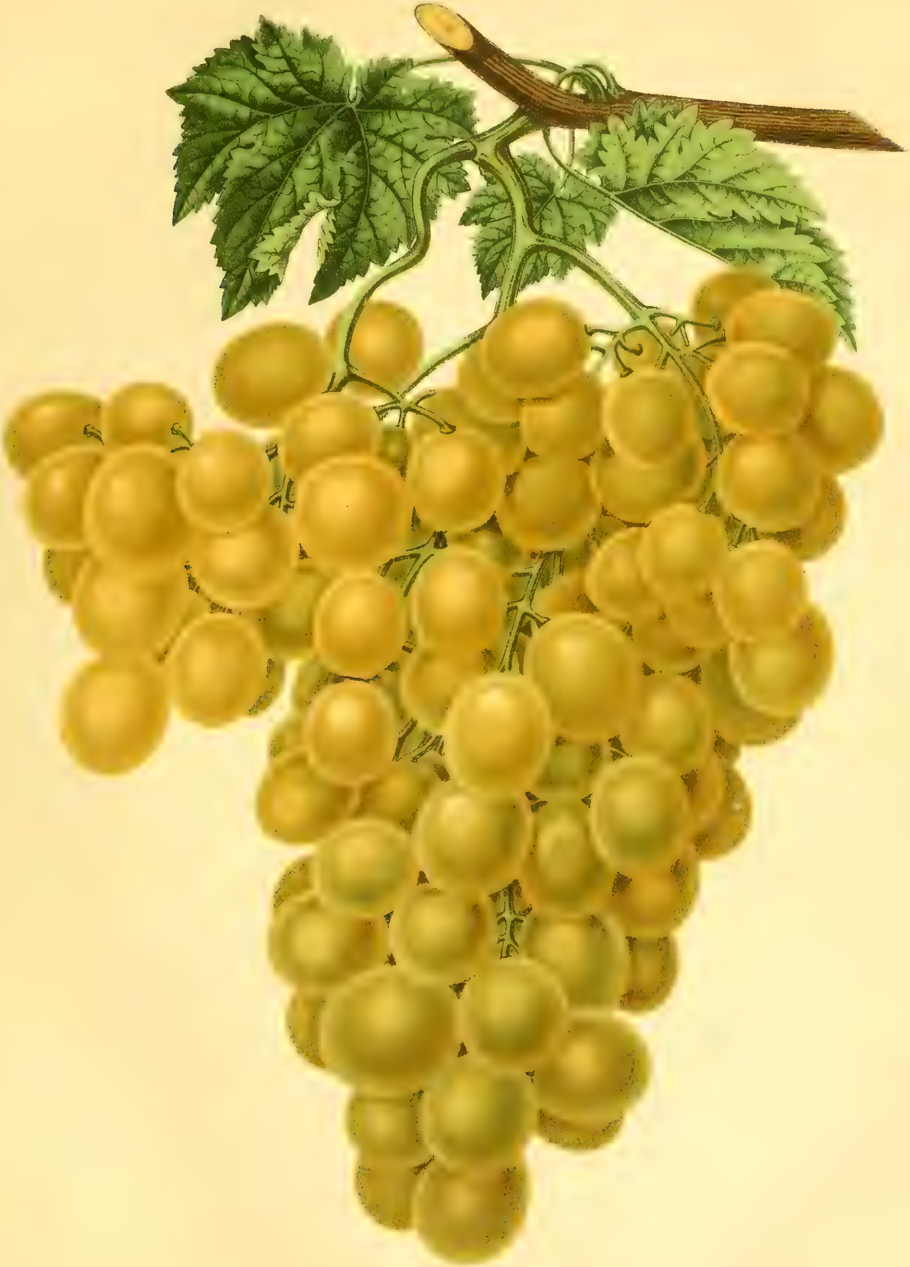


EARLY ASCOT FRONTIGNAN.

this defect, it is a good plan to draw the hand down the bunches when they are in bloom, so as to distribute the pollen and thereby aid fertilisation. It is this Grape which produces the Muscatel raisins imported in boxes from Spain.

Raisin de Calabre.—Bunches large, slightly shouldered, long and tapering, sometimes upwards of a foot in length. It is not first-rate as to flavour; but is, nevertheless, a good Grape to grow on account of its late-keeping qualities.

The Bowood Muscat and **Cannon Hall Muscat** are good Grapes and seedlings from Muscat of Alexandria.

Delicately-flavoured Grapes, and especially early ones, should be eaten as soon as they are ripe. Like the Pear, the period when they are in perfection is soon over, and, when once past the brisk vinous flavour gives place to a mawkish sweetness. It is too often the practice to grow early and late-keeping Grapes in the same vinery, and using the same treatment, to expect both to be fit for the table at the same time. It is hardly possible to make a greater mistake. In an early summer Grape you look for a thin-skinned, refreshing, juicy fruit; but, in the late varieties, it is necessary to have something solid and fleshy, which gains rather than loses by keeping. It follows, as a matter of course, that Vines similar in growth and time of ripening should be planted in the same house. Were the natural habits of the Vine more attentively considered, we should have fewer complaints of ragged bunches, uncoloured, unequal-sized, and seedless berries, with sloughing and mouldy skins. With more careful cultivation we should have less mildew, red spider, and other evils—the despair of gardeners. No plant is so grateful as the Vine, or so well repays the cultivator. When early forcing is commenced, the heat should be applied very gently for the first few days, and afterwards gradually increased; 60° is ample until the buds are all nearly opened; when the leaves are expanded 65° may be the maximum, and 55° the minimum temperature (taking care at all times never to be below the minimum). When the bloom appears, 75° or 80° at midday may be the average, but with solar heat abundance of air should be allowed. To ensure a good crop, the golden rules are—plenty of heat—plenty of air—plenty of moisture—severe thinning of bunches—and severe thinning of berries. The Vine must be maintained in a healthy growing state while performing its allotted work, pruned often, and its shoots kept free and open. Remember that no branches, no leaves; no leaves, no roots. Great attention should be paid to the airing of the house, which must be done gradually, so that there may not be at any time a sudden change in the temperature. A great deal of moisture is required, and the Vines often suffer to a considerable extent from the want of it, especially with a well-drained border. Moisture must be continued until the berries have completed their last swelling, when it should be withdrawn. With attention to these points, and the prerequisites of a rich border on a dry sub-soil, good crops of Grapes must always be obtained and healthy Vines secured.

Hillside, Newark. W. Newton.

Baobab trees and gigantic Euphorbias (see p. 176).

DURATION OF RASPBERRY BEDS.

The question is aften asked, "How long will a plantation of Raspberries continue remunerative?" To this a satisfactory answer can scarcely be given; for, even under apparently similar circumstances, one bed will continue production for thirty years, whereas another will be quite worn out when ten years old. Owing to the Raspberry renewing itself annually, with skilful cultivation and good soil its duration might be prolonged almost indefinitely, but such a course is neither advisable nor profitable, as Strawberries, Raspberries, and, indeed, all kinds of small fruits may be made to play an important part in a judicious rotation system of cropping. A vegetable quarter, for instance, converted into a fruit bed for a given number of years will, in due course, be available for vegetables again, the change being of benefit to both crops. The Raspberry likes a good depth of rich soil, but as this cannot always be secured within the limits of a small garden, good deep cultivation and heavy surface-mulchings afford it the greatest possible assistance, and, in very dry periods, a thorough soaking of liquid-manure is of great advantage to the crop. We generally trench ground intended for a new Raspberry plantation in September, and plant it as soon as the leaves begin to drop in rows 6 ft. apart. A single row of Strawberry plants is generally grown in the intermediate spaces during the two following years after planting as the canes are headed down pretty close, but by the end of the second year the canes should be at least 7 ft. high, and will, if properly managed, bear a heavy crop the following summer. After that, by means of an annual heavy mulching of farmyard-manure, they should, even on light soil, bear heavy crops for eight or ten years, when it is generally advisable to have another plantation coming into bearing, as the filling-up of gaps that are sure to occur after that period is never satisfactory in its results. Few fruits are more universally appreciated, either for preserving or for culinary purposes, than Raspberries, and therefore any extra labour bestowed on their cultivation is amply repaid. Birds are their greatest enemies, and, when very numerous, I find the only remedy is to build a temporary frame-work over them, and cover them entirely with close-meshed fish-nets, for these little depredators not only eat great quantities of the fruit, but in settling on the side branches break them off continually, thus injuring the succeeding crop. JAMES GROOM.

Henham.

MR. HIBBERD ON HARDY FRUIT CULTURE.

ACCORDING to the paper read the other evening by Mr. Shirley Hibberd, at the Society of Arts, it seems that his experiments on the cultivation of hardy fruits at Stoke Newington have been going on for the last quarter of a century. It is, therefore, to be regretted that "the light in his bushel" should have been kept so long from the pomological world; for, in this age of gigantic bunches of Grapes and of Pears each 3 lbs. in weight, what might have been effected had Mr. Hibberd's experiments been known earlier! It will be seen by his paper that his opinion of the fruit management of "practical pomologists" is decidedly unfavourable, and that they must take the Stoke Newington practice in hand for the future if they mean to succeed in supplying our markets with quantities of fine fruit. Dwarfing stocks he thoroughly condemns; nothing, indeed, but stocks strong enough to keep Apple and Pear trees growing to the size of Oak or Beech trees will satisfy him. His system of "pulley pruning" (or the willy nilly system), as applied to fruit trees by attaching pebbles to strings and fastening them to the leading branches in order to bring them nearer to mother earth to make them fruitful may be ingenious and original, but I am of opinion that a small block and tackle fastened to a peg in the ground with the string tied to the point of a branch could be gradually worked to make the branch descend low enough, and would, I believe, be an improvement on the pebble system! Mr. Hibberd promulgates in his system another original notion —that of a "reversible fruit wall," to keep the trees in shade, or expose them to sunshine in unfavourable situations, and this wall, he says, can be made with wood by any village carpenter at a comparatively trifling cost. As a practical pomologist of far greater experience than Mr. Hibberd, I am able to say that this vexed question of restriction and extension has taken up my attention for many years, and the conclusion at which I have arrived is, that much may be said both for and against restriction and extension. There is no doubt that Apples on the Paradise stock, and Pears on the Quince, are dwarfed and rendered more fruitful, and that little pruning is required, and that finer fruit is grown on them than on rampant trees. Both kinds of stock are surface rooters, and therefore on stiff tenacious soils, if top-dressed with manure or fresh soil, the roots always get the benefit of them, and fine fruit can be grown where trees on stronger stocks would fail. If Mr. Hibberd had seen, as I have seen, small cordon trees on the French Doucin stock loaded with fruit like ropes of Onions, he might have altered his opinion, for they were growing in situations where no pulley pruning could have been applied. With regard to Apples and Pears on strong-growing stocks, I believe with Mr. Hibberd that cultivators of them, who are not able to discriminate between good and bad pruning, had better let them grow unpruned as regards making them fruitful and profitable. I am afraid that Mr. Hibberd's "Reversible Fruit Walls" will, like his tiles for growing Potatoes, be only tried by enthusiasts, and that on a small scale. WILLIAM TILLERY.

Austen's Incomparable Melon.—I am glad to see by a late article in THE GARDEN (see p. 91) that you appreciate my favourite Melon, Austen's Incomparable, which was raised here by my late gardener, George Austen, who, on the occasion of my gaining a medal for it at the Royal Botanic Society's Exhibition in 1851, sold the seed, I think, to Mr. Tiley, of Bath. It was believed to be a pure Persian, the seed of which was brought from Persia, I think, by the late Sir Brook Bridges. I write, however, now to say that I have grown it exclusively (or nearly so) for thirty years, and have it still quite pure: if, therefore, your correspondent would like to try it again, I shall be happy to supply it. I do not know the Colston Bassett, so cannot speak of its quality.—F. PHILLPOTTS, *Porthywidden, Truro.* [I am pleased to learn the history of this Melon, and to hear that it can still be procured true. I have to thank Mr. Phillpotts for the offer of seeds of it, but I have just received a packet from a friend who received it from me years ago, and who has since grown no other. It deserves all that has been said in its favour; and, in order that there may be no mistake about the true variety, I may state that the fruit is large, round, yellow, and thickly netted, and the flesh green, melting, sweet, and delicious. Mr. Phillpotts would confer a boon on the public by sending it out again, for I believe it is lost to the trade.—S. W.]

The Lawrence Pear.—With regard to the Lawrence Pear, my opinion of its good qualities increases the longer I cultivate it, and I think the day is not far distant when it will be more sought after in its season than the much-vaunted William or Seckle, and I am sure that an orchard of this variety would pay handsomely. With me it does not do well as a dwarf; but as it comes into bearing the fourth or fifth year after planting, and the fruit is fully as large and good, nothing is gained by planting on the Quince stock. Like most standard Pears it does best on a gravelly loam. The good points of the Lawrence as a fruit, are good flavour, and good keeping. I have had it in eating from October 1st to January 10th, and shall have it this year until Christmas. Though not so high in flavour as the Seckle, I find that I can eat more of it without cloying. It is of good size for dessert, being larger than the Seckle, but not so large and rough as the Duchess. When ripe it is of a rich yellow colour, and does not rot at the core. This Pear, described as above in an American paper, is one of those sent us in autumn by Messrs. Ellwanger and Barry; it would appear to be well worthy of trial in this country, being distinct, large, and well flavoured.

Dwarfing Stocks.—Mr. Hibberd recently said:—"As regards the Paradise stock, there are at least half a dozen distinct varieties of Apples bearing that name in cultivation, and they vary considerably in their degree of fitness for the purposes of the propagator. The one which Mr. Rivers, of Sawbridgeworth, has for many years employed in the production of miniature Apple trees is the worst of them all, and the one employed by Mr. Scott, of Crewkerne, is the best; but they are all objectionable, because less vigorous in habit than the varieties of Apples commonly grafted upon them." With reference to this statement, it is only fair to mention that the stock sent out by Mr. Rivers as the English Paradise is an excellent one, as may be seen in many gardens in every county. The essential point, however, to bear in mind, is, that there is only one true Paradise stock, and that is the stock grown for ages in France as the "Paradis." This we do not ask the reader to accept without evidence gathered in our own gardens. Mr. Barron, Superintendent of the Royal Horticultural Gardens at Chiswick, made trials of every stock he could obtain; and while all the so-called English Paradise stocks have merits more or less as regards their dwarfing tendency, the French Paradise is distinct from them all in the early bearing habit it induces in the kinds grafted on it, and in its singular and valuable habit of forming a wig of roots near the surface in wet and heavy soils, instead of running down with a tap-root as all the other stocks do.

Melons in Murcia.—The Melon grounds of Alicante, in the province of Murcia, are somewhat disappointing. Never would you believe that from those dusty, little-watered plots, would come all the wealth of succulent Melons that lie in heaps at every street corner. The Melon grounds look like an English ploughed or fallow field, with a thin carpeting of Vegetable Marrow plants. Yet, here and there, you see the great, juicy, round fruit, half covered with dust, lying on the cracking earth. All those that were ripe were gathered over night. The Melons are planted in May; in less than a month they begin to bear fruit, and keep on bearing till the commencement of October; they require less water than any of the other plants. The Melon takes, from the time that the flower falls off, to the time of plucking, about forty days to arrive at maturity. These Melons are of two kinds—first, the Melon proper, with its yellow, luscious, honeyed fruit, so well known in England; secondly, the Sandia, or Water Melon, grown on the coarsest and most sterile soil, and which is the cheapest fruit in Spain, and the salvation of the thirsty masses. The Sandia weighs from 8 lbs. to 25 lbs., and is sold at a farthing or less per lb. Its huge bulk, its hard, coarse-looking, dark green rind, the rude way in which it is kicked about, would never lead you to believe that it is so justly prized as it is. Every traveller in Spain has been offered a slice of its flesh, that looks like a crimson rock, yet melts in your mouth before you can taste its flavour. On every long, hot, dusty journey, the second-class traveller buys a huge Sandia and offers a slice to his fellow passengers; every *table d'hote* groans beneath these crimson crags; a lump of this cools the fevered blood; two pounds may be eaten without fear of harm. The growth of the various kinds of melons is so much in advance of the immediate consumption, although poor and rich alike almost live upon them during two months of the year, that the gardener cuts thousands just before they arrive at maturity and hangs them up for the winter. Half or three-quarters of an acre, as nearly as I could calculate, would produce no less, in a favourable season, than 400 arrobas of melons! Each arroba weighs exactly 25 lbs. avoirdupois. Now, at a rough calculation, these 400 arrobas, weighing 10,000 lbs., may be estimated at the value of three farthings per pound, giving 30,000 farthings, which, roughly speaking, is equivalent to about £32. This calculation will give some, although but a slight idea, of the importance of the Melon trade. And, in forming his idea of the wealth of Spanish irrigated ground, let the reader remember that four crops annually are raised upon the same plot; and that growing amid Melon or Apricot grounds stand the Peach, the Fig, the Pomegranate, or the Almond tree.

Root-grafting Stone Fruits.—For the Peach, Plum, and Apricot I use the wild Plum for a stock. I take up the seedling Plums in the autumn, being careful to break off as few of the small fibrous roots as possible. I put them in a cool cellar, packed in earth, and leave them there until I wish to use them during the winter. When these roots are grafted I keep them moist, and do not expose them to cold. I use the whole root of the seedling, from 6 in. to 1 ft. long, to make one root-graft, whip-grafting near the collar. The grafted roots are then packed in earth in the cellar, to be planted out after all danger from frost is over. The success or failure depends greatly upon the amount of small roots upon the seedling stocks. Stocks that have been once transplanted are still more certain to grow when root-grafted. Last spring I did some grafting with scions and stocks which had stood out all the winter, and which had been exposed to a very low temperature; after the ground got into working order, I took up the Plum stocks, and whip-grafted them with Peach and Plum scions just cut from the trees. They were then put into the cellar until it was safe to plant them out; nearly all made a good growth, particularly the Peaches and Plums. —Theo. Williams, Nebraska, in "Prairie Farmer."

Melon—Gilbert's Victory of Bath.—My experience of this excellent Melon is not in accordance with that of "J. S.," as I proved it to be not only one of the best flavoured and most handsome in appearance, but one of the freest setters and most productive Melons I have ever seen grown. In the spring of 1874 I visited Mr. Gilbert at Burghley, and, with his usual liberality, I received from him packets of all his favourite Melons for trial. I sowed his Victory of Bath with the others, and never was more satisfied with any Melon than this. Without removing the plants from the pots in which they were sown, I plunged them in 11-in. size, which were filled within a few inches of the top with strong loam, rammed firm with a beater. Each plant was allowed to make 6 ft. of growth before it was stopped, and the laterals showed fruit in abundance, but their numbers were reduced to six or eight to each pot, and, when ripe, the fruit averaged from 3½ lbs. to 5½ lbs. each; the flesh was of great depth, the skin exceptionally thin, and the flavour was greatly praised. When the pots were well filled with roots, a surfacing of rich manure was given, and weak guano water was administered occasionally till the fruits were fully swelled. The pots stood on the surface of the bed, which was formed of decayed leaves, the remains of the material used for forcing plants in winter. We had a supply from various kinds as late as December, but Victory of Bath was the most serviceable.—M. T.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Malta Blood Oranges Seedless.—I find on cutting open some of these delicately-flavoured Oranges that they are without seeds. I should be glad to know if a race with this peculiarity is procurable. The batch of Oranges all called Blood Oranges in which my seedless ones occurred varied a good deal, some having abundance of seeds and being without the sanguineous streaks in the flesh that we usually suppose the characteristic of the Blood Orange.—W.

Preparing for Fruit Trees (B. E. R.).—Trench the land before planting, but do not turn up the bad subsoil. With care, you may plant for some weeks to come. The maiden trees on the true French Paradise need not be more than 4 ft. apart in the line or row from row.—N.

Renovating Orchards (T).—Dig around your trees, surface-dress them with manure, scrape the branches thoroughly, and wash them with strong soap-suds or weak lye. Cultivation of the orchard with light vegetable crops in the more open spots would do no harm.—T.

The Purple Guava (Psidium Cattleyanum).—I am surprised that this valuable addition to our choice fruits is not more extensively grown than it is. The back-wall of a Peach-house is a good place for it provided it can have full exposure to sunshine. As regards hardiness, it will succeed in a house from which frost is excluded. Give it plenty of water in summer, but keep it comparatively dry in winter; thin the shoots occasionally, and, thus treated, it will fruit in the autumn.—Rex.

LARGE SEEDS BEST.

The credit of first pointing out that large seeds, other things being equal, are the best, belongs to the late Mr. Thos. Andrew Knight, and the observations of all succeeding experimentalists prove him to have been correct. There are one or two points, however, which require consideration before we can speak with confidence in the matter. For example, it is important to consider whether vegetative growth only is required, as exhibited in Cabbages, Turnips, and other vegetables, or whether flowers and fruit, or, in other words, fertility, are required in addition. So far as my experience goes, the larger and finer the seeds, and the sooner they are sown after they are ripe (where circumstances admit of this being done), the better in all cases where vegetative growth or succulent vegetables are concerned; but in the case of flowering or fruiting plants, like the Cucumber and Melon, Tomato, and others, large and newly-ripened seeds are not invariably the best, as they produce exuberant seedlings, or, in other words, vegetative growth inimical to fertility. Of this fact cultivators have long been aware; hence old Cucumber and Melon seeds have been for years preferred to new ones, or if the latter must perforce be used, it is still not uncommon to carry them in the warm waistcoat pocket for a week or two in order to weaken their vitality by evaporation, and thus obtain earlier fruiting and more fertile seedlings. This question of luxuriant vegetative growth, as opposed to fruitfulness, should never be lost sight of, for the whole question of fruit growing or seed saving depends upon the proper balance which is maintained between these two distinct, yet inseparable conditions. In order to secure this balance we graft on restrictive or invigorating stocks, and all kinds of fruit tree training and pruning are intended to effect the same end, the degree to which they are carried depending on soil and climate. It therefore seems that the selection of seed is not only necessary, but that the selection must be to a certain extent regulated by the kind of crop required—that is, whether fruits or seeds are wanted, or merely vegetative growth. Thick seeding is, in many cases, a mistake, for crowded seedlings enfeeble each other, and all thinned out and not replanted represent so much power lost, and as to the thinning effected by slugs and insect-pests, they generally select the freshest and best seedlings they can find, just as wasps attack only the ripest fruit. Some few cases may exist in which thick seeding may be desirable, but as a rule thin seeding gives better results. The selection of the largest seeds of any given kind is most readily effected by using carefully made sieves or screens, and in this manner selection is now largely practised by our principal seedsmen, although not to that extent which modern experimentalists deem desirable. B.

Lilies in Pots.—I have been induced, through reading Mr. Baines's note on this subject (see p. 152) to send you a notion on the cultivation of Lilies both in the open ground and in pots, which I think will prove valuable. It is well known that good fibrous peat has considerable antiseptic power, and that the roots of many Lilies like rather more generous soil than peat is shown by the strong vigorous roots which we often see clinging to a small piece of loam. I believe that it will be found, if the two kinds of soil be placed in layers, both the preservative power of the peat and the good feeding power of the loam may be obtained. I have tried largely this season, both in new beds and in pots, placing at the bottom a good stratum of a mixture of loam, sand, and peat, then a thin layer of pure peat, then the bulbs, covering them with peat, then a good top layer of the loam, sand, and peat mixture, for the benefit of the roots from the top of the bulb.—George F. Wilson, *Heatherbank, Weybridge.*

Epiphyllums as Wall Plants.—These lovely autumn and winter-blooming plants require an elevated position in order to see them to advantage; they therefore look well on back walls of forcing-houses, on rafters, and in similar positions. They will succeed under a wide range of temperature, and are not at all particular as to soil. The system adopted here is to plant the Pereskia stocks in any position that it is thought desirable to ornament, and to train up shoots about 2 ft. apart, or single ones if amongst miscellaneous creepers or on rafters, and allow them to run to the top of the house before stopping; they quickly attain the necessary length, and about this time of year we insert on their stems grafts of Epiphyllums 1 ft. apart during their whole length, changing the varieties according to taste. Under the influence of a high moist temperature they make rapid growth, and will each produce the first year several heads of bloom; by the end of the second year they will be perfect columns of luxuriant leafage, and during the dullest months of the year each shoot will furnish an abundance of blossom; when planted out, they are not subject to that trying ordeal known as "drying off," and consequently their luxuriance astonishes even those who are well acquainted with their cultivation.—J. Groom, *Henham.*

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Eucharis amazonica.—This is one of the best of all stove plants for general decorative purposes or for furnishing cut flowers, blooming, with simple treatment, two or three times in the year at no particular season; and it can be regulated as required by alternate growth and rest, and will flower in either a small or large state, big plants of course producing the most blooms; but, for ordinary purposes, a medium size, say, grown in 10 or 12 in. pots, is the best, especially where space is limited. Amateurs possessing half-a-dozen plants of the above size will, by exercising a little forethought, secure a long succession of flowers. After resting, by withholding water partially for six or eight weeks, a couple of the plants at a time should be placed at the warmest end of the stove and be well supplied with moisture; this will quickly cause them to throw up their bloom-stems, when the flowers—of which there are several to each umbel when the plants get strong—will open in succession; and, when wanted for cutting, can be removed as needed. Well-established specimens will keep pushing up a succession of flower-spikes for several weeks, at the same time making fresh leaves and bulbs, which must be encouraged with plenty of water and heat (say 60° in the night and a few degrees more during the day) to complete their growth, which, when fully matured, must be gradually subjected to the drying process, and again rested, others, in the meantime, being induced to flower so as to succeed the first, and so on throughout the year. This Eucharis is one of the most accommodating of plants, and can, by being treated as above, be got to bloom at any time either during summer or winter. There are one or two things to be observed in its management; it must not be forced into rest when the growth is incomplete, that is, before the leaves have attained their full size; water must be withheld, so as to stop growth, but the soil must not be allowed to remain completely dry so as kill the leaves, giving a little when the plants flag; neither must they ever be subjected to too low a temperature, even when at rest, especially in the winter, as rest can be induced by letting the soil become dry; heat being beneficial in ripening the bulbs, they should not be kept for any length of time in a lower temperature than that of 50°.

Other Indoor Plants.—Euphorbia jacquiniæflora is one of the very best plants that amateurs who have the convenience of a stove can grow; not only is it easily managed, but it possesses the advantage of blooming in small pots, of about 7 in. or 8 in. in diameter. Its season of flowering can be prolonged for several months by growing a sufficient number of plants, and bringing them on in succession; after the first sprays of bloom have been produced from the leading part of the shoots, if this portion be cut off and the plants kept in a brisk heat—60° or 65° during night—they will push a second growth from the latent eyes, which will flower almost as well as the leading portions of the shoots. As I have before pointed out, to have the flowers of this and all other winter-blooming subjects that require stove-heat to bring them out in the best condition as to brilliancy of colour, and also to produce them with sufficient substance to stand long without flagging when cut, they must be placed whilst the flowers are coming on as much under the influence of full light as possible. In the matter of light to winter-flowering plants, there is frequently a want of conception, many supposing that if a plant stands in a light house with its top within two or three feet of the glass this is sufficient to give to the flowers their wonted properties. This can best be understood by relating my own practice with the description of subjects under consideration. I place the plants on a shelf on a level with the bottom of the front upright lights, about 2 ft. from the roof; if the shelf be further from the roof than this, elevate them on inverted pots. I then take some thin string and fasten it with tacks across the underside of the sash-bars of the roof-lights; the strings, thus running lengthways of the house over the path, are placed about 6 in. apart; such plants as this Euphorbia, Plumbago rosea, slender-growing Begonias, and any subjects with straggling pliable shoots are arranged with their branches up against the strings, and kept in their places by strings run underneath them. The object of the first course of strings is to keep the shoots from absolutely touching the glass, the moisture upon which would rot both leaves and bloom. The difference in the intensity of colour and substance in the flowers so produced, as compared with those borne by plants that are arranged in the usual way in a stove during the short days of winter and early spring, can only be realised by those who have tried both methods. One great advantage is that when flowers are grown under conditions that enable them to last long, especially when cut, fewer plants are needed to produce the requisite quantity. The demand for cut flowers at the present day is such as to require through the winter season close attention in learning the best means of producing them; this can only be arrived at by trying different methods with different plants. Too high a temperature that induces quick development is not generally conducive to the flowers lasting long; but any attempt to bring plants into bloom with considerably less than the requisite amount of heat usually ends in failure; yet there are some exceptions—the brilliant Poinsettia pulcherrima requires a brisk heat to bring its flaming bracts up to their full size, but if a portion of the plants be placed about Christmas in a house or pit where a temperature of 50° in the night can be kept up, with 5° more during the day, they will flower and produce their bracts about half the usual size; but thus grown they will last upon the plants for eight weeks most intense in colour; the heads in this size are more useful for cutting than when larger, and the individual bracts, when used for bouquets, are much better than those produced in more heat. When all the above plants have ceased flowering they should be placed at the coolest end of the stove, and have just as much water given them as will keep the soil from getting quite dry; do not head them down till later on, when they will receive more heat to start them into fresh growth. The varieties of Centradenia, C. rosea, and C. floribunda, are small-growing plants, very suitable for amateurs either in large or small houses; their flowers will last for a considerable time either on the plants or when cut; they are easily grown in a temperature of 55° or 60° through the winter.

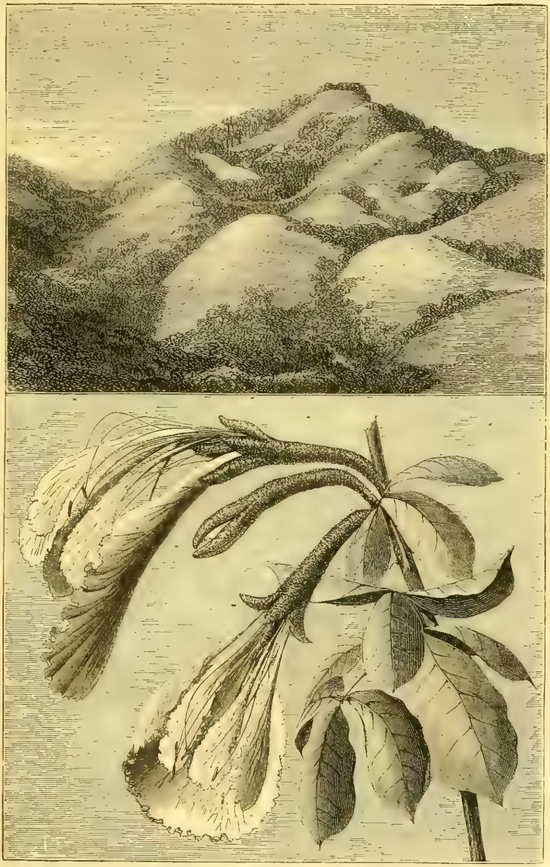
Hot-beds.—Fermenting manure, as prepared for a Cucumber bed, should by this time be in condition for use; where no regular frame-ground exists, a place should be chosen fully open to the south, so as to receive all the light possible, but sheltered from the north and east winds, as upon this will depend the length of time that sufficient heat can be kept up without the trouble of applying fresh manure to the sides of the bed. At this early season it should be made 3 ft. longer, and as much wider than the frame which is to be placed upon it, and ought not to be less than 4 ft. 6 in. in depth when finished, as it will settle to half the height when made up. Put on the frame at once, and raise the lights at the back an inch or two to allow the steam to pass off, thrusting a stout stick in the centre to test the heat afterwards before the soil is put on. It is better not to make up the first bed larger than will do for a single-light frame, making another larger later on wherein to grow the plants, merely using this for bringing them forward until fit to plant out. Although it is always advisable to make the first bed sufficiently early to get these and many other seeds that may be raised in it as advanced as circumstances will permit, yet I should recommend amateurs who have not at command a sufficiency of hot stable manure alone, or plenty of leaves to mix with it, so as to keep the heat up in a way that will prevent the plants being checked in any way, to defer hot-bed making for a few weeks later, as disappointment is sure to follow when early made hot-beds cannot be kept up to the required temperature. Much slighter beds will do for Potatoes, Radishes, and Carrots, as there is nothing gained by putting together a larger body of fermenting material than is necessary to start these fairly into growth; if the beds be 2½ ft. high and 8 or 10 in. wider all round than the frame, they will be sufficiently large.

Early Peas.—As soon as the first-sown Peas make their appearance, another sowing should be made, putting in some of a similarly early sort to those first sown, as also a sowing of second early, such as Champion of England or Cullingford's Champion; if all these be sown at the same time, a succession will be ensured. In cold backward soil, where it is found necessary to make the first sowings of Peas in frames, vineries, or any cool house in which room can be spared, with many amateurs the strips of turf usually used for sowing them in are not to be obtained. In this case they may be sown in propagating boxes, putting them in thickly, say not more than ¼-in. apart, and covering them with an inch of soil; they will soon vegetate. When they have got 4 or 5 in. high, they should be removed to the south side of a wall to enure them to the open air, after which they can be moved from the boxes with as little mutilation of the roots as possible, and planted in rows in a sheltered sunny border. In sowing Peas in this way, the soil should be of a loose nature, such as old potting soil, or such as was used for Cucumber or Melon beds last season, to which may be added some leaf-mould, as, if put in adhesive heavy material, the roots will be much broken in moving them from the boxes.

Radishes and Mustard.—When the first crop of Radishes lately recommended to be sown in the open ground is up, the litter should be drawn off them daily, when the weather is mild; if they be attacked by slugs, strew a little soot and lime mixture over them. The birds are sometimes very troublesome when they first appear; a few lengths of white thread strung across the beds, about 9 in. from the ground, will be found sufficient to deter them. Another sowing of Radishes should be made, which should also be covered with litter. Some Mustard should also be sown under a south wall protecting it with a mat.

Forcing Houses.

Continue to introduce into these a few plants of a hardy nature, such as Rhododendrons, Azaleas, Deutzias, Lilacs, Weigelas, Sweetbriar, and plants of that class, according to requirements. Where plants are in much request for decorative purposes in large conservatories, halls, &c., a few of the above, associated with large Palms, Ferns or fine foliaged plants, make bold, effective groups, and may be used in place of others of far more value. Both Rhododendrons and Azaleas succeed almost equally well (when dug up and potted for forcing at once) with others that have been grown and established for years; therefore, any one having plants well set with buds that are now standing in beds or borders from which they can be spared, need have no hesitation in taking them up, as they always lift with well-matted balls. These may be considerably reduced to suit the size of the pot it may be thought desirable to place them in, as their powers of rapid root-formation are so great when placed under favourable conditions, such as the warm humid air of a forcing-house, that they scarcely feel the removal, but expand their flowers as freely as if they had never been disturbed. Small as the ball may be that is left on them, it is sure to contain an immense number of the most minute roots, that are soon in an active state after the plant is once placed in heat. Where such as these are used, well ply the syringe over them, so as to keep their leaves constantly moist, and water freely at the roots to encourage a fresh set of feeders before the flowers expand, or they may at times flag for want of support if dry, sunny weather prevail when the plants are in bloom. Keep such as Eupatoriums and Spiræa japonica well saturated with water, as they will take any quantity, and improve in size and healthy appearance, according to its use. Any of the latter, Lily of the Valley, or indeed all plants that have been forced, should when out of bloom be returned to the shelter of some warm house or pit, where they may continue their growth unchecked. This is the time of all others when plants require the greatest amount of attention, as the tender growth made in the close confined air of a forcing-house is sure to be thin and delicate, and therefore easily susceptible of injury. If flowers be expected from the plants next season the foundation must now be laid, and the only way of doing this is to place them where they can have the benefit of a little heat and moisture to keep them moving slowly on. All bulbs of Hyacinths, Tulips, Narcissus, &c., intended for late blooming that are now under ashes, should be got out at once, before growth becomes further advanced, or they will materially suffer; place them in close moist frames, so as to obviate the necessity of watering, and keep a mat over them for a few days, as a too sudden exposure to light would be sure to affect the blanched leaves unfavourably. The mild humid atmosphere of the forcing-house, or other similar position, should now be made use of to forward a few plants of Humea elegans, as they are sure to come in usefully for single vases in both the conservatory and flower garden during the summer months. When clothed with healthy foliage down to the pot, and carrying large heads of their graceful, feathery, reddish-brown plumes, they are exceedingly effective in either of the above positions. A good stiff loam, with one-third of thoroughly decomposed vegetable matter, such as leaf-soil, is the most suited to their requirements; pot firmly, and give plenty of water as soon as the roots reach the sides of the pots. If allowed to suffer at any time from want of this, they are sure to lose their under leaves and present a shabby appearance. Keep the temperatures of the above structures as uniform as possible, always dispensing with fire-heat during the day whenever it can be done, as the sun will be found to do its work in a far more satisfactory manner. Very little, if any, air beyond what finds its way through the laps will be needed till the sun has much more power, and raises the temperature higher than is considered necessary or desirable for the well-being of the occupants. As plants begin to expand their flowers, elevate the heads so as to bring them up as near to the glass as possible, that the flowers may be improved both in colour and texture. In some cases it may be desirable to remove them to more airy and less humid structures to open their bloom, and any little extra labour in this direction is sure to be repaid by the increased time they will last.



View in the Hilly Country of Quiballa, Angola—Camöensia maxima (see p. 177).

Stove Ferns.

These will now be pushing up their young fronds, and therefore no time must be lost in re-potting such as require it. The soil for this purpose should have been got under cover as previously suggested, and where this has been done it will now be in a proper state for use. If, from unavoidable causes, it still remains stacked and exposed to the outer air, a sufficient supply for each day's use should be got into the Fern-house overnight, and this will admit of the plants being potted without taking them out and subjecting them to the chilling air of an ordinary potting-shed. Where this is unavoidable, a few only should be taken out at a time, that they may be returned again as quickly as possible. As the different varieties do not all succeed equally well in the same kind of soil, it will greatly facilitate operations, where there are many to be potted, if those that prefer a soil consisting principally of peat be taken in hand first, or *vice versâ.* The strong growers require a much larger proportion of loam, so that both cannot well be treated at the same time without a constant mixing of soils. As most Ferns improve by abundant supplies of water when growing freely, the pots should be well drained that it may pass readily through, or the soil will soon become close and sour, ending in the destruction of all delicate feeding roots, if not of the plant itself. Avoid over-potting, as that is a source of much mischief where the watering is in the hands of those unskilled in plant culture, or who pour it into the pots without examining whether the plants are in a fit state to receive it or really require it. Much injury is done in this way, especially during the winter months, and nine-tenths of the failures in the raising of plants that occur may be traced to this cause. This is not so much the case, perhaps, among Ferns, as they do not suffer so readily in this way as most other plants, but even to keep them in a healthy vigorous state there are times when the utmost care should be exercised in giving them water; as, for instance, immediately after potting, and during the autumn and winter when growth is less active or has nearly ceased altogether. At such times very little water is requisite, and if given at all freely, injurious results must follow. With plants fresh potted, be they Ferns or any other, if water be given too liberally before the roots get full possession of the new soil, it will become sodden, in which state few plants make use of it. In potting Ferns, let the soil be as rough as possible, that it may lie free and open, a condition in which most of them delight in; for Gleichenias, Phlebodiums, Goniophlebiums, Davallias, and others of that class that have their rhizomes scarcely buried beneath the soil, or send them clinging over the rims of the pots or pans in which they are growing, can seldom be turned out without breaking or injuring a number of them; and it therefore becomes necessary either to destroy the pots or to transfer them to others with the old one entire, the latter, in some cases, being the most preferable. Fresh sweet soil, in however small quantities, has a most beneficial effect on the health and vigour of most Ferns, and where it is not thought desirable to shift into larger pots, a good top-dressing of rough loam and peat may be advantageously employed; or, better still, in the case of such as have small fibrous roots so as to admit of the ball being reduced, shake off a portion and re-pot in the same-sized pots, as it often occurs that these must be limited, to render the Ferns suitable for particular purposes. Advantage should be taken while the stock is going through hand to divide such as it is thought desirable to increase. Most Ferns readily admit of this being done, and the best way to effect it is to cut the ball completely through, using for the purpose a large sharp knife or other suitable instrument. When potted, give a good watering to settle the soil, and keep the house well charged with atmospheric moisture. To effect this, syringe the floor of the house, the stage among the pots, the walls, and all available surfaces. On the afternoons of fine sunny days, give a gentle bedewing overhead, and keep the house close till they start freely.—J. Sheppard, *Woolverstone Park.*

Indoor Fruit Department.

Peaches.—In the early house the fruit will now be set, and where it is thick it should be partially thinned out at once, leaving more than enough for a crop until the stoning process is over. Rub off all back and front shoots, and disbud where the young wood is too thick. Admit air on all favourable occasions, but avoid having front and top air on at one time, so as to cause a draught. Shut up as much sun-heat in the afternoon as possible. Use the syringe freely night and morning, and maintain a night temperature varying from 55° to 60°, with sufficient front air to keep up an equable atmosphere, and prevent red spider. Never allow the border to get dry, and ascertain that it is watered to the bottom, for Peaches and Nectarines are impatient of drought. Should green fly make its appearance fumigate with tobacco smoke on two successive nights. For trees in flower the atmosphere should be kept drier at night, and the temperature at about 55°. Assist the setting in the middle of the day by means of a camel's hair brush. Avoid currents of air, but keep up a gentle circulation in the atmosphere, which should be dry. All late houses should now be got ready for starting; avoid laying in too much wood, the results of over-crowding being weak, watery shoots, that generally drop their buds the following year. Top-dress, and if dry, water, keeping the house perfectly cool until a start is to be made.

Figs.—Attend strictly to pinching as before recommended; keep the plants in good shape. Maintain a night temperature of from 55° to 60°, and water with manure-water every time water is needed; for, being gross feeders if profusely drained, they will be benefited thereby; syringe freely morning and night, but, where the fruit shows signs of splitting, gradually withhold water; shut up as early as the sun-heat will allow, with an agreeable humid atmosphere. Figs may be readily grafted or budded in the same way as the Vine, and as soon as a few leaves have been made is a good time to perform the operation.

Strawberries.—Those that have set their fruit may be forced sharply by day, but the night temperature should not be above 60°; water with manure-water, and they must never be allowed to become dry. High flavour and colour are unobtainable by hard forcing; bring forward successional batches in a temperature of from 45° to 50°, and keep down green fly by means of tobacco smoke before the plants come into flower.—J. Hunter.

Hardy Fruit.

The recent cold weather has given a beneficial check to vegetation, there having been no perceptible difference in the growth of fruit-buds for more than a fortnight. Appearances are now in favour of a late blossoming period, a circumstance much to be desired, for, if the fickleness of our spring season be taken into account, the later the trees can be made to blossom the greater are the chances of a full crop of fruit; so convinced am I of this that at this season, and onwards till the buds begin to burst, we here let down the wall-coverings to shade the trees whenever the sun shines, and the results have been such as to justify me in recommending the practice to others. In our uncertain climate protection of some kind or other for Apricots and Peaches is imperatively necessary, and where proper appliances in the shape of curtains of canvas, frigi-domo, and hexagon netting do not exist, a temporary covering can be made by placing poles in a sloping form against the walls, and fastening netting to them two or three ply-thick, straw or hay-bands, evergreen branches, or thick twiggy branches of Birch; where large branches of the latter can be had, poles will be unnecessary, as the thick end of the branch can be fastened in the soil, and the spray may be allowed to rest lightly against the trees. This is a simple and expeditious mode of protection, and very effective. It is of the greatest importance, both for the welfare of the trees and for keeping pace with the work, that all pruning and nailing be completed early; and, if through unavoidable circumstances, either of these operations must be left till late in the season, let it be in reference to trees on north walls, such as Plums, Currants, and Morello Cherries; and when pruning the latter keep in view the fact, that the fruit is mainly produced from the wood of the past season's growth, consequently the system to adopt in pruning is, first to thin out all weak or unripe shoots; and next, till the trees are sufficiently thin, those most bare of buds, which will generally be wood that has borne most fruit the previous season. Raspberries must now be pruned and thinned out, for if left longer, injury will be the result. There are many modes of training them, but the best is a strained wire fence, about 4 ft. in height, to which the canes should be trained, in a slanting manner, 6 to 9 in. from each other. The Raspberry, being a gross feeder, requires a large amount of manure, which should be applied in the form of surface-mulchings, and not dug in. Autumn-fruiting sorts should now be cut right down, and, as new canes are formed, thin out the smallest, leaving four or five of the strongest to each stool. Where new plantations are to be made, select for them the wettest part of the garden, and if partially shaded from the sun, so much the better, for they delight in a cool position, and are most impatient of drought.—W. Wildsmith, *Heckfield.*

Trees and Shrubs.

In the nursery the filling up of vacant quarters with deciduous trees and shrubs should be pushed on whenever the weather is favourable for such work. The planting of tree and shrub cuttings and the sowing of forest tree seed (with the exception of that of Conifers), if not already done, should not be deferred much longer. During frosty weather cart or wheel manure or compost on to bare ground where required, and the annual stock of leaves and turf should be conveyed to the nursery and stacked. Ornamental planting in progress must now receive attention, particularly the planting of deciduous shrubs and trees and Pampas Grass. Rhododendrons should also be planted now in order to ensure their blooming well the first season, but the planting of other evergreens may be put off till later in spring, so as to afford opportunity to get on with the planting of deciduous trees and shrubs, as late planting, in this case, tends to check growth during the incoming season.—G. Berry.

Pitman's Sun-dial.—Old Mills, the optician at Milwaukie, sold a sun-dial to Pitman a short time ago, with the assurance that it was a first-rate timekeeper. About a fortnight afterwards Pitman called at the shop and said, "Say Mills, that sun-dial ain't worth a cent; it's no good as a time-piece anyway." "Did you ever time it by your watch?" "Certainly I did. I've stood close to it often exactly at the even hours, and the blessed thing has never struck the time once." "Impossible! Why, you did not expect it to strike the hours, did you? It don't strike, of course; it has no works inside." "That's what puzzles me," said Pitman. "If it ain't got no insides, hows it going to go?" "Mr. Pitman, where have you placed that sun-dial—in the garden?" "Garden! My gracious, no! what do I want with a timepiece in the garden? It's hung in tha settin'-room agin the wall."

THE KITCHEN GARDEN.

THE GREAT AMERICAN POTATO COMPETITION.

Dr. F. M. Hexamer, of the Committee for awarding the £100 premiums offered by Messrs. Bliss to growers of the largest quantity of Snowflake and Eureka Potatoes from 1 lb. of seed, has prepared an interesting and valuable report. It will be remembered that the conditions for competitors required a sworn statement of date of digging, with a written memorandum of mode of culture, characteristics of soil—whether clay, alluvial, sandy, or loam—nature of subsoil, whether underdrained or not; also, the kind and quantity of fertilisers used, how and when applied, with the weight of the product when dug and the number of square feet occupied by the crop. Growers were placed under no restrictions as to their mode of culture, excepting that the Potatoes must not be raised from slips or forced by artificial heat, the object being to ascertain their respective merits with such culture as is usually given to crops in a well-managed vegetable garden or farm. The award of prizes was as follows:

For the Largest Quantity of Snowflake from 1 lb. of Seed.

	lbs.
First prize to P. C. Wood, Esther, Ill.	1417
Second to J. L. Perkins, Little Sioux, Iowa	1304
Third to Frederick H. Seiler, Verona, Essex Co., N. J.	1125
Fourth to J. I. Salter, St. Cloud, Minn.	1090⅓
Fifth to Alfred Rose, Penn Yan, N. Y.	1089⅔
Sixth to Henry V. Rose, Penn Yan, N. Y.	1069¼

For the Largest Quantity of Eureka from 1 lb. of Seed.

	lbs.
First prize to J. L. Perkins, Little Sioux, Iowa	1666¾
Second to P. C. Wood, Esther, Ill.	1403
Third to Alfred Rose, Penn Yan, N. Y.	1149
Fourth to Milton M. Rose, Penn Yan, N. Y.	1145
Fifth to J. I. Salter, St. Cloud, Minn.	1087
Sixth to Henry V. Rose, Penn Yan, N. Y.	1066¼

When two years ago your Committee awarded the first prize for the largest yield of Extra Early Vermont Potatoes. from 1 lb. of seed to Mr. Salter of Minnesota, for the then unprecedented yield of 607 lbs., many considered the climax of productiveness reached, and not a few doubted that such a quantity had ever been grown from so small a quantity of seed. Yet so much has the general interest and ambition stimulated the cultivators of the soil, both here and in Europe, that in England nearly double that amount (1082 lbs.) has been grown from 1 lb., and in our own country no less a yield than nearly treble that obtained then entitles now to a first premium, and nothing less than 1000 lbs. from 1 lb. can win even the lowest premium. These marvellous results will naturally cause, with many, suspicions about the correctness and truth of their statements; yet no one who has carefully examined the reports and affidavits, and has read the many letters received from disinterested parties, all of which vouch for the reliability of the successful competitors, can doubt the veracity of their reports. We have given above the full address of every successful competitor, so that anyone may satisfy himself about the standing of these gentlemen, and if any false statement should have been made, we would be glad to ascertain the fact, that such parties may be exposed, and excluded from competing for premiums to be offered hereafter. Ten barrels of Potatoes from 1 lb of seed! What next? It is easy to calculate: fifteen, twenty and forty barrels! There is not one competitor who does not know that he could have done better, and that he will do so next time; that if every one of his hills had yielded like the best ones, and in a more favourable season, his yield would have been much larger, and that if two hills may be made to yield 56 lbs., more can be made to yield a like and even larger amount, which would, in this case, have given 6680 lbs., or over forty-one barrels. Mr. Perkins's soil was "a mixture of sand and clay, very rich in vegetable matter to the depth of 18 ft., and underlying this is a gravelly subsoil. For three years the ground was used as a stock-yard the straw being left on the ground to rot and be burned." Another competitor describes his soil as "black loam, 4 ft. deep, on the bank of a creek, and it has been used as a cattle-yard for ten years." Another, "as vegetable mould and sandy loam, 3 ft. deep, never cultivated before." Many describe their soil as "deep, very rich, the best Potato soil in the State."

The fertilisers used comprise nearly every known manure, and the quantities applied are not less enormous than the crops raised with them. Most growers have made compounds of various materials, and some seem to have faith in complicated formulas, which they prepare with the accuracy of a physician's prescription. About the value of wood ashes, poultry manure, and plaster, however, there seems to be no doubt, and we find them used by a large majority. Sulphur has been used by many. This substance does not enter into the composition of the Potato, and it would be interesting to know if its application actually increases the yield. Have experiments to this effect been made?

The fact that single eyes and eyelets will, with good care, produce large crops, has been sufficiently proved. All the large yields were grown from very small sets. In some cases, single eyes were divided into ten pieces, and in one instance 240 sets were made from 1 lb., nearly all of which grew well. The sets, with few exceptions, were planted singly, yet we find a product of 970 lbs. raised from fifty-two hills, two sets to each, nearly 19 lbs. per hill, and 677 bushels per acre. Whether this large yield is due only to the very favourable soil they grew in (a rich black loam, formerly used as a stock-yard), and the immense quantities of ashes applied in the hills and as top-dressing (one peck to the hill), or to the two-set system, does not appear. It is to be regretted that a part of the plot was not planted with one set to the hill, and the products weighed separately. The planting in nearly all cases was done between the 10th and 26th of May, and one-fourth of all competitors dropped the seed on the 10th of May, nearly a week earlier than in former years. A comparison of the distances between the hills with the average yield per acre gives a most interesting and valuable Table as follows:—The sets planted at a distance of

2 by 3 ft. gave a yield of 378 bushels per acre.
2 „ 4 „ gave a yield of 462 bushels per acre.
3 „ 3 „ gave a yield of 651 bushels per acre.
3 „ 3½ „ gave a yield of 441 bushels per acre.
3 „ 4 „ gave a yield of 372 bushels per acre.
3½ „ 4 „ gave a yield of 342 bushels per acre.
4 „ 4 „ gave a yield of 332 bushels per acre.
4 „ 8 „ gave a yield of 88 bushels per acre.

The large number of data, of which the above figures form an average, give these statistics a special value. It will be seen that although the greatest yields from 1 lb. grew from hills 4 ft. apart, the largest crops per acre were raised at distances of 3 ft. each way, and that as the distances between the hills are increased or decreased, the yield diminishes in regular proportion. In the first case, there remains wasted ground which is not reached by the roots of the plants; and in the latter, the roots are so crowded that they cannot obtain all the nourishment they are capable of consuming. The mode of planting and cultivating with a large number of best cultivators, consists in crossing their fields with furrows 6 or more in. deep. The sets are dropped at the crossings and immediately covered with about 2 in. of soil or compost. The haulms as they grow are hilled up gradually, and frequently to a final height of 12 to 18 in.; then large, broad hills are made, using all the soil between the rows.

A considerable space in the reports, enough to fill a good-sized volume, is taken up with descriptions and praises of the new varieties. The Snowflake has received more and higher praise than has probably ever been bestowed upon any Potato. There is no dissenting voice among the whole list of reports, nearly everyone of which contain, "It is the best Potato I ever saw." Its quality and uniformity of size are especially commented upon. In many cases twenty-five to forty perfect Potatoes were found in every hill planted, and tubers of 2 and 3 lbs. each cooked readily and completely through. Mr. Perkins could select 1000 tubers weighing 1000 lbs. from a gross product of 1304 lbs., and finds them preferable to any Potato out of over 100 varieties he grew. Mr. Salter "never saw so fine a Potato; beautiful in colour and shape, firm in texture, flesh white; luscious cooked in any way; it stands unrivalled." There is certainly within our knowledge no variety which combines all the essential points of a Potato in as high a degree as the Snowflake. Quality, shape, size, colour, yield, are all that can be desired, and it is difficult to preceive in what direction further improvement can be obtained.

The Eureka, having had nearly as extensive a trial as the Snowflake, has likewise received many favourable notices. Some growers value it as much even as the preceding. Its main value, however, seems to consist in its immense productiveness. Two hills yielded 56 lbs. in one case, and in another instance 970 lbs. grew from fifty-two hills, being an average of nearly 19 lbs. per hill and 677 bushels per acre. There are cases reported where three tubers from one hill weighed 9 lbs.; and one grower reports one single tuber weighing 5 lbs.

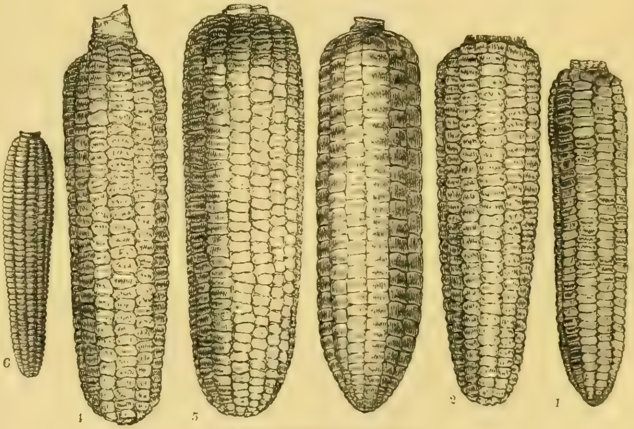
Yet like those excellent old varieties, the Pinkeyed, Kidney, Mercer, and others, which have deteriorated and passed away, so will these now uneclipsed favourites have their day and will be heard of no more. Therefore, do not pause in your good work, Messrs. Pringle, Brownell, Compton, Bresee and other raisers who believe in perpetual progress! We can never know how much we may accomplish as long as we continue our labours. There has been gradual increase of vigour, combined with good quality, in many of the new seedlings raised since the time of the Rev. Mr. Goodrich. The Snowflake and Eureka have been grown alongside of some older sorts, and it has been found that the new varieties will stand almost any amount of manuring and return a corresponding yield of tubers, while the older sorts under the same treatment would make nothing but haulm and a few small tubers.

EARLY VEGETABLES.

We are all apt to attach an imaginary value to any crops that can be got early; therefore anything that tends to hasten the maturity of our earliest crops of vegetables is a great desideratum. Even with a large amount of glass in the shape of pits and frames for forcing early vegetables, it is desirable to take advantage of the most sheltered positions in the open air for forwarding a small planting of the vegetables in greatest request, so that there should be no blank between the forced products and those of the main crops. For this purpose there is nothing more serviceable than borders in front of walls with a south aspect, such as are usually devoted to Peaches, Apricots, &c. I find the best results are obtained with borders of medium width of about 10 or 12 ft., with a sharp incline from the wall, to catch every ray of sunshine, as it is by economising both those that fall on the border and those that are reflected from the wall, that the crop is enabled to arrive at its earliest maturity. Few vegetables are more universally prized for their earliness than Peas, and by planting the rows at wide intervals, so as to admit of intermediate cropping, and by thickly staking the rows and adding evergreen branches as an outer protection, they form excellent screens for breaking the wind, which is even more disastrous to early crops than frost, or rather the effects of the latter are more easily guarded against by temporary coverings at night. Early Cabbages should also always be accommodated, for in March and April they are highly appreciated as a first-class vegetable, but where plentiful in open quarters are looked on but indifferently by kitchen authorities; next should follow the earliest Ashleaf Kidney Potatoes to succeed those in pits; Cauliflowers protected by hand-lights or cloches, and gradually hardened off; Early French Horn Carrots are always in demand; and very useful will be found a small sowing of Early Dutch Turnip, any early dwarf variety of the Broad Bean, and French Bean. Salads should have at all times great care, and a row of Cabbage or Brown Cos Lettuce planted close under the wall in autumn comes in very early and acceptable. A portion should also be devoted to the earliest sorts of Strawberries. The quantity of each need not be large, as the main crops advance rapidly as the temperature increases, and last longer in perfection on cooler ground; but the advantage of a fortnight's supply gained on the main crops is sometimes of great importance. As the early crops are cleared off, the borders should be heavily mulched and watered to assist the ripening crops, and the succeeding autumn crops generally consist of late French Beans, Cauliflowers, and salads. Brown Cos and Cabbage Lettuce, Green Curled and Batavian Endive, if covered with Fern fronds, may be had in perfection the whole winter. James Groom.

GOOD VARIETIES OF SWEET CORN.

We need not consume time or space in speaking of the value of good Sweet Corn, nor of its culture. A few remarks about varieties are all that will be necessary. The earliest good Sweet Corn with which we are acquainted is the Minnesota (fig. 1); following in about ten or twelve days, is Russell's Prolific (fig. 2); Moore's Early Concord (fig. 3) is in use a week or so after Russell's; and Crosby's Early (fig. 4) is in use about the same time, perhaps a day or two earlier: it is very thick, 12 or 16-rowed. Stowell's Evergreen (fig. 5) is a magnificent late variety, keeping in use almost until winter. There are many varieties of Parching Corn; one of them is shown in fig. 6, called the White Parching.—James Vick. [Some of these varieties would seem to be well worth a trial with us, particularly numbers 1 and 2. It is well to bear in mind that, to enjoy "Sweet Corn," it is not necessary to ripen it. The grains are consumed in their green and tender stage, as young Peas are. Therefore, over a large portion of the country, "Green Corn" could be enjoyed, and there are few vegetables so good.]



The best varieties of Sweet Corn.

HEELING-IN BROCCOLI.

I cannot consistently allow some remarks on this subject in The Garden (see p. 124) to pass unnoticed. It is there assumed that the immunity from frost enjoyed by market garden and field crops of Broccoli over those grown in confined gardens arises from the greater amount of air to which the former are subjected, but this is not wholly in accordance with fact; on the contrary, the immunity in question is rather due to the difference in culture. In private gardens it is the rule to move the soil to a great depth and manure heavily; this induces rank growth, and the stems of the Broccoli, instead of consisting of tough woody fibre, have a great proportion of soft pith, and in very severe weather soon succumb to frost. The check obtained by heeling-in comes too late, as it is not done until hard weather is close at hand, and all my experience goes to prove that plants that have their roots disturbed then are much less capable of withstanding frost than if left with their roots intact and well established. For heeling-in in close confined gardens to be of any real value, it should be done at the end of August, and then the plants would have plenty of time to obtain a fresh root-hold ere the winter became severe. Still I have doubts as to the utility of the process; growers for market seldom move their soil below 12 in., and often less; although they manure very freely, their plants do not strike root deeply, but large numbers of small fibrous roots are secured which promote a vigorous and solid growth and a hard stem. Market growers also roll their ground firmly before planting; indeed, as a rule, Broccoli prefers soil much harder than it usually gets in confined gardens. A. D.

As in our own columns, writers to the "Gardener's Magazine" vigorously defend heeling-in Broccoli. Mr. Cooks says:—"I am surprised to see the good old practice of heeling in or laying down Broccoli so strongly written down. I have followed the practice for a number of years, and followed in the footsteps of some good old practical gardeners, and can say with confidence I have always found very great advantage by it, especially so with the tall varieties, such as Sutton's Perfection, Veitch's Spring White, the last-named being the most valuable of all I grow for spring use. I have some of the dwarfer kinds—Miller's Dwarf, Backhouse's & Snow's Winter White—not heeled in. After the last fall of snow they looked beautiful; but, as the leaves drooped with the weight of snow, many broke off, exposing the most tender parts of the plants to 18° of frost, which we have had here." Another correspondent says:—"After many years' experience I am satisfied that Broccoli carefully heeled over will endure unharmed 10° to 15° of frost more than those standing upright. If the writer who condemns the practice intends to say that Broccoli so treated produces smaller heads than those left untouched, then I can agree with him; but I would ask, Are not small heads better than none at all?"

POTATO CULTURE IN SMALL GARDENS.

After the exhaustive reports on Potatoes which we have had, it may be superfluous to say more on the subject; but, although we are now in possession of some valuable facts as to the disease which so seriously affects our crops, we unfortunately cannot yet congratulate ourselves on possessing anything like a specific remedy; anything, therefore, likely even to abate the virulence of the disease may be acceptable to many, as, notwithstanding its attendant drawbacks, the Potato is still the staple crop in garden allotments; and in this neighbourhood there are few labourers who cannot dispose of a sack or two of Potatoes even after providing for home consumption. East Anglia may perhaps enjoy some immunity from disease, its atmosphere being usually dry and buoyant; but the character of the soil is such that most of our local societies, instituted for encouraging cottage and allotment gardening, divide the occupiers into heavy land and light sandy land cultivators, the latter having such a decided advantage over the former that it is considered impossible for them to compete together on anything like equal terms. The light lands in this district are mostly sandy loam, of scarcely sufficient texture to finish off heavy crops of grain, especially during seasons of drought; but as the Potato makes most of its growth before the effects of a dry summer are much felt, especially if the soil be well prepared, and as the crop, if rather less bulky, is almost certain to escape disease or be little affected by it, the excellence of the tubers and their good cooking and keeping qualities more than compensate for their loss in weight. The most successful cultivators hereabouts appear to be those who rest their hopes of a crop on thoroughly deep cultivation and exposure of their lands to the pulverising effects of frost, rather than on large additions of manure, which is not only difficult to obtain in country places, but often out of reach of the cottager. Deep cultivation not only ensures a suitable feeding ground for the tender rootlets, but also thorough drainage, so that rain readily passes through it. Light land, too, thus cultivated is several degrees warmer than heavy soil resting on a subsoil, cold, wet, and inert, a condition by no means improved by heavy dressings of manure. The soil on which our best Potatoes are grown is generally ridged or rough dug in autumn and during winter any manure, road-scrapings, or wood ashes available are spread over it. In March it is dug over again and the sets planted as the work proceeds; 2 ft. 6 in. and 3 ft. are the regular distances between rows, and as light warm lands produce plenty of weeds frequent surface-stirrings have to be resorted to, not only for destroying the weeds, but also for promoting the growth of the crop. As regards varieties, new kinds are generally improvements in appearance rather than in flavour, and, as Potatoes are grown to eat, it is not surprising that cottagers who grow them and customers who buy them prefer such sorts as Gloucestershire Kidneys, English and Scotch Regents and Flukes, to more modern sorts. The main crop is generally lifted about the end of September or early in October, when those that are diseased are separated from such as are sound, and after that the latter generally remain good. If no convenient place for storing them be available, they are placed in ridges and covered with dry straw, and before frost sets in a good thickness of soil is put over them. A change of seed has a marked influence on the crop, and should always form a part of the routine of cultivation. James Groom.

Henham.

HISTORY OF THE JERUSALEM ARTICHOKE.

This plant is a production of the warmer parts of the Western Hemisphere, and consequently unknown to the ancient Greeks and Romans. Sir James Smith says, in his "Introduction to Botany," that the name of this vegetable is a corruption of the Italian name Girasole Articiocco (Sunflower Artichoke), and was first brought from Peru to Italy, and thence propagated throughout Europe. This tuber, which is more agreeable than profitable, was, according to "Science Gossip," first cultivated in England during the reign of James I., as we are informed that in the year 1617 Mr. John Goodyer received two small tubers, not bigger than a hen's egg, from Mr. Franqueville, of London; one he planted, and the other he gave to a friend. His own brought him a peck of tubers, wherewith he stored Hampshire; but he remarks that they are meat more fit for pigs than men. This note bore the date of October 17, 1621. From this it appears that this vegetable was introduced into England by the French, who met with it in Canada, as Parkinson, writing in 1629, mentions it under the head of Battatus de Canada, the French Battatus, or Jerusalem Artichoke. Coles also, whose work was printed only forty years after it was known in this country, called it the Potato of Canada; but we are informed in Martyn's edition of Miller, that "it was so called because the French brought it first out of Canada into these parts; not that Canada is its original country, for it is unquestionably the produce of a hot climate, being a native of Brazil."

In Parkinson's time Artichokes used to be baked in pies with marrow, Dates, Ginger, Raisins, larks, &c., but the facility with which they increased by cultivation made them so plentiful and cheap in London that even the common people despised them, although when first introduced they were said to be a dainty fit for a queen. In the "Bath Society Papers," Vol. iv., Mr. Nehemiah Bartley, near Bristol, in 1787, gives an account of some experiments he made in cultivating this plant as an agricultural crop, and states they are about equal in value to Potatoes for feeding young pigs. But their chief recommendations are the certainty of a crop, as they will flourish in almost any soil—in the corners of fields and other waste places. Under favourable circumstances, 10 to 12 tons per acre have been grown.

The stems of this plant grow to a considerable height, and their fibre might probably be found valuable for making paper; the leaves are stated to contain nitre. In the tubers a chemical substance is found, called Inuline, which is organized, according to Raspail, like common starch, but stands, to a certain extent, in opposition to that substance, which it replaces in the root system of the composition, and has not been detected in any other tribe. Iodine gives it a yellow tint. Inuline was discovered by Valentine Rose in 1804. The Jerusalem Artichoke multiplies very quickly, and is with difficulty cleared out the land where it has once been planted. It very seldom blossoms in this temperate climate; the flowers resemble a small Sunflower.

A New Tuberous-Rooted Caraway.—Dr. A. Kellogg has some interesting remarks on a plant with the above name in the "Horticulturist." He says:—"Carum Gairdneri is a very important plant, because it promises much to the gardener and the florist. A particular description is needless, as in general appearance, and indeed in every way, it is the representative congener of the European Chervil on the Pacific coast. The flowers are of the most chaste white, and for an umbel the neatest we ever saw. We have had it cultivated occasionally, but never with sufficient persistence and care as to do anything like justice to it. For this reason mainly we invite attention to it, in hopes that those who can may be induced to prove its value for themselves. What is desirable is so to establish its introduction that from the garden we may possess a new dish of rare delicacy, and another charm for the flower-vase. The roots, as observed, are small, seldom over ½-in. in diameter by 2 or 3 in. long, pure white, with a creamy cuticle. Eaten raw as they are dug, they are delicious; but their sweetness and flavour are greatly improved if kept until about half-dried. There is not the least doubt that with skill in choice of suitable conditions, soil, &c., from 200 to 300 bushels to the acre could be raised. We have eaten them in soups and various ways, and have often sent the seeds abroad, but their vitality soon perishes, unless great care is bestowed in packing, as well as speed in transit. It is a hardy plant, suited to cold climates and damp well-drained rocky, gravelly, or mixed clayey loams, especially 'dry runs.'" Have Messrs. Vilmorin, or any of our English seedsmen, any experience of this plant?

Germination in a very low Temperature.—It has been commonly stated that germination would not take place in seeds below the freezing point of water. M. Uleth, however, states that seeds of Triticum, and, indeed, other seeds also, were found to germinate when placed in grooves formed in blocks of ice.—"Prairie Farmer."

Superphosphate of Lime. — Superphosphate of lime produces a very quick effect, and besides the fertility it adds to a soil, the rapid development it ensures to plant life, enables the roots to lay hold of much food they would not otherwise procure. In the garden it is of especial value to hasten growth while plants are still small and unable to reach coarser manures, and also to touch up and bring forward any portions of crops which seem to need further help. While depending chiefly on stable and green manures, yet we always find profitable use for more or less superphosphate.—J. R.

Ashes in the Garden.—Leached ashes have an especial value on sandy soils, and have a marked effect on Onions, Potatoes, and root crops. Their value is lasting, and the results of a liberal application will be noticed for years, and, if not to be carted more than three miles, their use is profitable. Unleached ashes are especially effective when applied broadcast over Onions partly grown; in fact, they form one of the most valuable special manures for this crop, and are worth for this purpose twice the amount paid by soap-makers. For all garden crops they are valuable, Potatoes, Turnips, Beets, and Peas, deriving the most benefit next to Onions.—A. B.

Spent Hops.—Brewers' spent Hops are, in some places, so abundant as to be an important fertilizer, generally one load being equal to two of stable-manure. But I have found them most valuable, when well-rotted, for raking into the surface of seed-beds in which are raised Cabbage, Celery, and other garden plants, since they retain moisture, keep the surface loose and light, and in every way favourable for the successful growth of plants. In like manner they are excellent for any plot where you wish a most vigorous growth—vegetables for exhibition, for instance—since they furnish abundant fertility, while they keep the soil in the best condition for growth.—J. Root.

Vegetables in San Francisco.—San Francisco is a paradise for vegetarians, to judge by reports of the fruit and vegetable markets there. Lettuces, Radishes, Cabbages, and Onions are always in season. New Potatoes are ready in January and last until Midsummer. Peas and Beans make their appearance in February, and linger until December. Tomatoes are in the market in March and April, and are a drug for months. The same may be said of Cucumbers; in fact, almost all kinds of vegetables can be found in the markets during the greater portion of the year. Carrots, Cauliflowers, Parsnips, Yams, Turnips, Beets, Parsley, Spinach, Cabbages, Sorrel, Rhubarb, Celery, Asparagus, Artichokes, Onions, Cress, Tomatoes, Mushrooms, Egg-plant, and scores of other vegetables are cultivated and thrive well. Strawberries, Raspberries, Blackberries, Gooseberries, Wortleberries, Currants, and other berries flourish. There is scarcely a day in the year when Strawberries cannot be obtained in the market, and they form no rare dish at Christmas dinners. Besides these articles, the market constantly affords a supply of Figs, Oranges, Lemons, Limes, Pine-apples, Grapes, Bananas, Pomegranates, Pears, Cherries, Peaches, Apricots, Nectarines, Apples, and almost all kinds of Nuts.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Making Gravel Walks.—I should be glad if any of your readers would kindly furnish me with the best way of making gravel garden paths so as to prevent weeds from growing, worms from disturbing the surface, and green tints from defacing the paths near shrubberies.—R. P. Edwards, *Bath.*

Lime in the Garden.—Lime is of most value on rich, old soils, its effect being to unlock and release fertility already in the soil, but inactive or insoluble. Hence, upon poor soils it may sometimes do more harm than good, but used upon rich, old garden soils, its use occasionally will produce astonishing results. It, however, is sometimes used with good effect on poor peat soil, such as that in many parts of Surrey.—J. R.

Lamb's Lettuce.—This long known but now-a-days too little used plant forms one of the most pleasant salads obtainable at the present season. I use it not merely as an adjunct or to mix with Lettuce, but to form a distinct salad of itself or mixed with Celery only. In this way I enjoy a distinct dish. The general mixture principle must be avoided by those who wish to enjoy good salads.—R.

The Oil-trees of China in Europe.—Attempts are being made to acclimatize this plant in France, and with hopes of success. The oil is extracted from the fruits, which yield one-third of their weight of a thick, colourless, tasteless, and odourless oil, which at a reduced temperature becomes a thick, viscid substance, possessing drying properties of the most complete type. This is probably the oil used by the Chinese in their varnish and japan-work.

Plumbago capensis and Cut Bloom.—Like Mr. Henderson (see p. 147) I find this to be a useful autumn-flowering plant. A large example of it here, planted out in the border of a greenhouse and trained over the back wall, furnishes an abundant supply of flowers all through the autumn months. When done blooming, it is kept moderately dry, and allowed a short period of rest. In the end of January it is pruned back to the old wood, and, after being occasionally syringed, breaks freely. It is allowed to ramble at liberty, and, during the summer months, receives occasional supplies of manure-water, which help it considerably. From this single plant we can cut flowers three and four times a week for months. Like Plumbago rosea, however, it does not stand long when cut.—R. Greenfield, *Priory Gardens, Warwick.*

Another way of Preserving Walnuts and Filberts.—After the Nuts have been gathered a short time a sufficient number of perfectly clean pots 5 in. in diameter are taken, and a piece of slate is laid in the bottom to cover the hole. The pots are then filled with Nuts, of which each pot holds sufficient for a dish. The pots are then covered with pieces of slate and plunged in any spare corner to a depth of 18 in. Here they remain until required for the table, and they are removed from the earth one at a time. Larger pots may no doubt be employed, but, to my mind, there is a great convenience in each pot holding just sufficient for a dish, because there is no necessity for exposing the Nuts to the air until required for the table. When preserved in this way they remain in a perfectly fresh state for a long time.—J. Apling, in "Gardener's Magazine."

Rhodanthe in the Greenhouse.—That charming Everlasting, Rhodanthe Manglesii, is in some places cultivated in pots during the winter with great success, and when in flower in the spring used for the decoration of the conservatory. It is when grown in this way that we come to realise something of its great beauty, the bright pink flowers of the old type, and the satin-like blossoms of the white variety, with their golden centres, being very beautiful. For this culture the seed is sown early in August under glass, and when the plants are large enough to admit of transplantation they are singled out and planted three or five in a 60-pot, according to their size, and placed on a shelf close to the glass, where, with a free circulation of air, they will be unharmed by damp. Moderate supplies of water are given, and as the plants require it, they are shifted into larger pots; the side branches are stopped as soon as they attain a length of 3 in., and all flower-buds are removed till the plants are thoroughly established in good-sized pots. Plants thus treated have been seen in 10-in. pots forming half spheres nearly 2 ft. in diameter, and covered with hundreds of flowers; in the presence of such specimens the valuable character of the Rhodanthe as a decorative plant is seen. The treatment needs to be liberal, and from Christmas onwards a warm growing temperature is requisite, the heat increasing as the days lengthen. This is recommended, in order that the plants should make as much headway as possible in the early part of the spring, for as the light increases the inclination of the plants to bloom is so great that it is difficult to procure them of large size. A moist atmosphere in spring, and an occasional dose of liquid manure, weak rather than strong, are of great assistance—with a fumigation now and then when green fly proves troublesome. The soil best suited for the growth of the Rhodanthe in pots is one composed of equal parts of turf and peat, with a sprinkling of gritty sand, for the winter, substituting leaf-mould and manure for the peat at the subsequent shiftings.—"Gardener's Chronicle."

The Gum Tree in Algeria.—Since the growth of plantations of this tree around the lake of Fezzara, the malaria, which formerly was intense, has almost disappeared. The village of Ain Mokra, according to Captain Ney, furnishes an equally striking instance. The station was formerly so unhealthy that it was necessary to change the French garrison every five days on account of the number of men attacked. Fever has, however, become much more rare since plantations of Eucalyptus globulus have been made on the shores of the lake and the sides of the railway, which include altogether 60,000 trees.

Trees in the Garden Landscape in Winter.—Mr. J. J. Thomas lately read a very interesting essay on Beautifying Winter Landscapes, which may be done by planting trees with ornamental bark, as White Birch, Golden-barked Willow, Golden Ash and Red-leaved Ash, all of which contrast beautifully in winter when interspersed with evergreens. There are some varieties of Oaks which, when young, retain their foliage or various hues through the winter. Other trees and shrubs, as Mountain Ash, Black Alder, Sweet Briar, and others, hold bright red berries, which in winter are very ornamental.

NEW PLANTS, &c.

Cypella peruviana.—An elegant habited Peruvian Irid, bearing very showy flowers of a bright orange colour, the three shorter segments having rich purple eye-like spots, which add considerably to the brilliancy of the flower, all the segments being barred at the base with brown.

Crocus Weldeni.—This is a smallish white or lilac tinted plant supposed to be a variety of C. biflorus. It is a native of the limestone hills of Dalmatia, where it flowers in January and February; in this country, however, it does not bloom until March. It was introduced by the Rev. Harpur-Crewe, who received it from Major R. F. Burton, who collected it at Trieste.—"Botanical Magazine," t. 6211.

Senecio (Kleinia) chordifolia.—A South African species having succulent stems, terete, glaucous green leaves six to ten inches in length, and six to eight flowered panicles of greenish yellow flowers. It is a botanical curiosity, but of no value whatever as a garden plant. The two best ornamental species of this enormou genus of Groundsel are S. pulcher, a large carmine-flowered plants, and S. macroglossus, which in habit resembles Ivy, and bears large eight-rayed golden flowers.—"Botanical Magazine," t. 6216.

Pescatoria Dayana, var. Rhodacra.—One of the prettiest of the four or five varieties of Pescatoria Dayana now known in English gardens. The flowers in size, shape, and substance, resemble those of Pescatoria cerina. The sepals and petals are creamy white, with purple tips; the anther case is also purple, as also is the crest and base of the oblong lip. These purple and red-tipped Pescatorias have been largely imported during the last year or two, and they have frequently been exhibited by Messrs. Veitch and Mr. Bull. They are all natives of New Granada.—Botanical Magazine, t. 6214.

Viburnum dilatatum.—A hardy white-flowered Japanese shrub, with large bright green leaves, somewhat like those of the common Hazel Nut. There are ten or twelve Japanese species of Viburnum, including the present plant, which promises to be a welcome addition to our gardens. Some of the Viburnums owe much of their beauty to the fact that they bear enlarged but abortive flowers in a way analogous to those of the Hydrangea. In the present species, however, the flowers are all normal, forming dense rounded clusters at the apex of the downy stems.—"Botanical Magazine," t. 6215.

Ill-spelt Plant Names.—Mr. P. H. Gosse, referring to the amusing spelling of plant and other technical names so often seen in daily papers, points out in the "Gardeners' Chronicle" that it is to bad writing more than to bad spelling that the errors are due. "The rapid mode of forming the letters, which every one is now obliged to practise, necessarily assumes that the reader (or the compositor, when the matter is to be printed) has aids to understanding the document, besides the mere form of the letters;—he catches the general sense; he knows what the writer will probably say; he knows what words will most likely be employed; in general, if only a single letter in the word be certain, the word is instantly suggested to the mind; and this is at once tested by the appearance and the number of the formless letters, and by other considerations, almost without a conscious effort. But if the words be unknown to the reader, or unfamiliar, these helps are wholly wanting. Thus, to a compositor quite sufficiently educated to decipher ordinary current hand, botanical names are perhaps totally unknown; and if these be written in the usual rapid and careless way, he has no clue to their component letters; and if the proof be not submitted to the author, small blame to the printer if his article be full of blunders. Taking your correspondent's examples, the two closing lines contain only common English words; and the printer has had no difficulty. Why did he set up "Frices"? No doubt the author had written "Ficus," but he had written it so that only the initial and the terminal were recognisable; the "F" and the "s" were connected by four curves, which might just as well do duty for "rice" as for "icu." To the compositor's mind there was nothing to suggest Ficus, rather than Frices, or Furis, or Freecis, or half-a-hundred other combinations of letters usually represented by mere touches; but this is only one form of the mischief: in the correspondence of every day, how often do we receive letters, the body of which we have little difficulty in deciphering, but of which the signature, and perhaps the address, are hopelessly illegible! Why? For the very same reason; we have no clue to guessing. We cannot possibly guess a proper name. Gosse, if written in this style, may be Gope, or Gassi, or Gersi, or almost any other uncouth assemblage of vowels and consonants. Now for the remedy. It is not learning to spell better. And I do not recommend a forming of every letter in copy-book style; this would be hopelessly quixotic. But the evil would be met if only writers would have the consideration to put themselves for a moment in the position of their own readers; then they would write such casual words, as common sense tells them will not be spontaneously suggested to the reader, in plain round copy-book letters; particularly all proper names, and all technical terms. If this simple rule were observed, how many thousands of editors and printers, not to mention private friends, would be gladdened!

Select Rhododendrons.—Will you kindly give me the names of the best varieties of hardy Rhododendrons that bloom from May until August or September, the colours to be brilliant—say, vivid crimson, bright scarlet, vermilion, or cherry; also a few good white kinds?—M. E. A. M. [The following is a list of a few really hardy Rhododendrons, both scarlet and white kinds, that bloom from May till July; there are no hardy kinds which bloom so late as August: —*Scarlet, crimson, and rose*—Alexander Adie, B. W. Currie, Blandyanum, Comte Gomer, Countess of Clancarty, Cynthia, Caractacus, Concessum, Dictator, Earl of Shannon, Eclipse, Frederick Waterer, H. W. Sargent, John Walter, John Waterer, Joseph Whitworth, Lady Cathcart, Lord Eversley, Lady Falmouth, Lady Claremont, Michael Waterer, Mrs. John Kelk, Mrs. John Waterer, Pelopidas, R. S. Holford, Sir J. Clarke, Sir H. Mildmay, The Crown Prince, The Warrior, Vandyke, William Austin, W. E. Gladstone. *Whites*—Delicatissimum, Exquisite, Gloriosum, Lady Guinness, Madame Carvathe, The Queen, Minnie, Mrs. John Clutton, Mrs. Thomas Agnew. —John Waterer, *Bagshot.*]

Vaporisers v. Insects.—The following is the plan which I employ for destroying small insects on plants:—Every one is acquainted with the so-called "vaporiser," consisting of two glass tubes placed at right angles to each other, one of which is dipped in a bottle of Cologne water, while by blowing into the other the water ascends, and is thrown off in very minute spray. I have adapted this principle to a strong pair of bellows, attaching bottle and all to the nozzle. Instead of perfuming the insects, however, with Cologne water, I use a strong infusion of tobacco stumps, such as have been smoked. I filter this infusion in order to prevent it from choking the tubes; then, setting the plants on a long elevated board, I shower them thoroughly on both sides with the spray, a plan so effective that not a spot as big as a pin's head escapes untouched, and in a few hours there is not an insect visible on the plants. When I feel particularly vindictive I mix a little strychnine with the liquor. By using the bellows, I obviate the necessity of putting my mouth to the tube. Perhaps this or a similar contrivance may already be in use; it is, however, original so far as I am concerned.—Preston Powers, *Florence.*

The Last Vintage in France.—The general results for the year 1875 are now known, the yield being estimated at 83,635,391 hectolitres (22 gallons each). Of the departments the Hérault stands first on the list for the abundance of its yield—9,423,193 hectolitres; then follow Charente-Inférieure, 8,694,334; Charente, 5,439,757; and the Gironde, 5,279,410. The produce of the year surpassed that of 1869 by 13 millions of hectolitres, the latter having been the most favourable for its yield in the present century until exceeded by 1875. The vintage of the latter year, however, is inferior to that of 1869 in the strength of the wine; the estimate being that the average alcoholic properties will not exceed 8°; whilst in the earlier year they were at least 10°, at which strength the most ordinary wines may be kept for two, three, and four years, whilst the wines of the quality first named require the addition of alcohol if they have to be stored or sent to any distance. In France 2,000,000 hectares, or nearly 5,000,000, acres are devoted to Vine culture, and the average production of wine exceeds 80 hectolitres; the total amounts to about 176,000,000 gallons, valued at two-and-a-half milliards of francs, or £100,000,000. It is estimated that about 90,000,000 gallons of wines, spirits, and liqueurs together are annually exported from France, of a total value of £16,000,000. Sparkling wines enter largely into this quantity, upwards of 50,000,000 bottles being exported annually. The home consumption of wine in France is about 25 gallons per head of the entire population. The foregoing figures taken from the "Chronique de la Société d'Acclimatation," will give some idea of the importance of this industry in France, and the urgent need of an efficacious remedy against the spread of the phylloxera. The same journal gives the average production of Spain as 30,000,000 hectolitres; Italy, 33,000,000; Portugal, 4,000,000; Austro-Hungary, 174,000; and Roumania at 600,000 hectolitres; making a total of 67,774,000 hectolitres, or about 1,500,000,000 gallons. Then there remain all the German wine-producing countries, and those of southern Russia, both yielding enormous quantities. In proportion to its capabilities Greece produces very little wine, the greater part exported coming to England.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

FEBRUARY 16TH.

AT this meeting, which was somewhat thinly attended, the chief objects of interest were a showy group of hybrid and cross-bred Hippeastra from Messrs. Veitch and Son, several of the best of which were certificated, and a very attractive bank of Cyclamens from the same exhibitors. Fruiting branches of the Loquat or Japanese Medlar (Eriobotrya japonica), came from the gardens of Mr. R. Burn, of Blyth, Woolhampton. Several seedling Apples were submitted to the Fruit Committee, but none of any special note, if we except Gidney's Pearmain, and a large and handsome seedling which closely resembled Cellini.

First Class Certificates.—These were awarded to the following new and rare plants, viz.:—

Hippeastrum, Rev. J. Staniforth (Veitch).—A rather dwarf large-flowered variety, with broadly ovate or oblong much imbricated petaloid segments of a deep red, streaked with crimson, and having a greenish-white stripe and central star.

H. Junius (Veitch).—A deep crimson-scarlet variety, with more slender segments than the last, and a green eye, the white filaments contrasting well with the vivid crimson segments.

H. Phœbe (Veitch).—One of the most beautiful of the group, the segments being of the most vivid velvety scarlet, and the eye green.

H. Agatha (Veitch).—This has large broad petalled flowers of a red or vermilion colour, streaked with scarlet, each segment having a greenish-white tip.

H. Sultan (Veitch).—A small-flowered variety, with rather narrow segments; deep crimson in colour with a green eye.

H. Circe (Veitch).—A large broad-petalled flower and well reflexed; petals deep crimson with a green eye, the three lower segments having indications of a light stripe. These Hippeastra were, for the most part, crosses between H. pardinum, H. Leopoldii, H. Ackermanni pulcherrimum, and others, and their colours varied from rich crimson through all the shades of rose, white, vermilion, and scarlet, and some were striped, tipped, or margined in the most distinct manner possible.

Plants.—Messrs. Veitch's Cyclamens were in 48-sized pots, and each bore from thirty to forty flowers—white rose, magenta, lilac purple, blush and crimson purple, in colour. Mr. H. James, Castle Nursery, Lower Norwood, showed a dark, richly-coloured variety of Dendrobium nobile, the sepals and petals of which were deeply suffused with magenta; Mr. Green, of Holmesdale Road, Reigate, furnished three plants of the bright green and elegantly cut leaved Prenanthes elegans, a perennial as graceful as a Palm, the result of a cross between P. arborea and Sonchus laciniatus; Mr. Stevens, gardener to G. Simpson, Esq., Wray Park, Reigate, showed Peperomia marmorata, a plant having dark velvety green leaves, ovate in shape, and conspicuously marbled with silvery grey.

Fruit.—A fine dish of Gidney's Pearmain Apple, said to be a seedling from Cornish Gillyflower, was shown by Messrs. Lucombe, Pince, & Co., of Exeter. It is a variety quite distinct in colour from Cornish Gillyflower, but somewhat like it in shape; its flavour is rich and juicy, and the variety well deserves culture as a handsome late dessert fruit. Mr. J. McLaren, Ash Vale, contributed a dish of large greenish-yellow Apples suffused and streaked with red; the specimens sent were as large as those of Blenheim Orange, of an ovoid shape, with the deep eye of Cellini, which the Committee thought it too much resembled to merit any award. Mr. H. Colbourn, gardener to R. Burn, Esq., Blyth, Woolhampton, sent cut branches of the Chinese Loquat (Eriobotrya japonica), well furnished with excellent fruit, which is borne in terminal clusters of five or six together, each being as large as a crab, and of a soft orange-yellow colour; their flavour somewhat resembles that of a sour Apricot. The Loquat may be fruited with tolerable regularity in a cool conservatory or orchard-house, and even out of doors in warm sheltered localities it is well worth culture. Messrs. Rivers, of Sawbridgeworth, showed specimens of a German Apple received from Stuttgardt under the name of Breitling. It is a large, heavy, yellowish-coloured variety, dotted with green something like Northern Greening, and, like that variety, is said to be an excellent culinary Apple. Mr. Harrison Weir contributed a handsome dish of Blenheim Orange, some of the specimens of which were quite crimson on the sunny side; this, as is well known, is one of the most useful of all Apples, but it is rarely seen so highly coloured as in this instance; from the same exhibitor came a dish of Josephine de Malines Pear, named Matthews Eliza; the Rev. G. Kemp sent a dish of Joly de Bonneau Pear, a rather large variety, in a state of excellent preservation, and covered with deep reddish russet; Messrs. Lane, Berkhamstead, furnished examples of a medium shaped seedling Apple, deep dull crimson in colour, dotted with yellow; from Mr. F. Bonsall came specimens of a small yellow Apple, named Campsmount Pippin, a kind possessing little merit.

Vegetables.—Mr. Pottle, Sudbourne Hall, contributed Barbe de Capucin and Witloof, the latter considerably the stronger and more succulent of the two. Both, when blanched, are useful for salads, and even for stewing if thought desirable. The same grower showed two excellent varieties of Dandelion in good condition. Mr. Monro, Potter's Bar, sent a boxful of his Cucumber called Duke of Edinburgh, each fruit of which measured from 10 to 12 in. in length, although grown without bottom-heat. Mr. F. Bonsall showed examples of a seedling Onion resembling the Brown Spanish, and Mr. H. Weir furnished a seedling red or purple Potato named King Harry, possessing apparently little merit.

A New Use for Wood.—The application of wood for stuffing beds seems, at first sight, an anomaly, nevertheless, a patent exists which moreover appears to be quite practicable, for disintegrating the wood of various kinds of Pine, so that it becomes as light and elastic as hair. The resinous properties of the wood cause it to be very healthy, and to act as a preventive against vermin. It is producible at a price far below that possible for any other material, except straw and seaweed, in quantities as low as 4s. per cwt.

Royal Horticultural Society's Officers for 1876.—The Council and Officers for the current year consist of the Right Hon. Lord Aberdare, President; Mr. Henry Webb, Treasurer; Dr. Hogg, Secretary; the Earl of Mount-Edgcumbe, Lord Alfred S. Churchill, Hon. and Rev. J. T. Boscawen, Sir Trevor Lawrence, M.P., Mr. F. Campion, Mr. G. T. Clark, Col. R. Trevor Clarke, Dr. Denny, Mr. William Haughton, Mr. W. B. Kellock, Mr. P. W. S. Miles, and Mr. Robert Warner. The Earl of Mount-Edgcumbe and Mr. T. Clark were elected, at a special meeting held after the adjourned annual general meeting on the 10th inst., to fill the vacancies caused by the resignations of Admiral Hornby and Mr. A. Grote.

Sensation in Plants.—M. Figuier believes that a plant has the sensation of pleasure and pain. Cold, for instance, he says, affects it painfully. We see it contract, or, so to speak, shiver under a violent depression of temperature. An abnormal elevation of temperature evidently causes it to suffer, for in many vegetables, when the heat is excessive, the leaves droop on the stalk, fold themselves together, and wither; when the cool of evening comes, the leaves straighten, and the plant resumes a serene and undisturbed appearance. Drought causes evident suffering to plants, for when they are watered after a prolonged drought they show signs of satisfaction. The Sensitive Plant, touched by the finger, or only visited by a current of unwelcome air, folds its petals and contracts itself. Desfontaines saw one which he was conveying in a carriage fold its leaves while the vehicle was in motion, and expand them when it stopped—a proof that it was the motion that disturbed it. Sensation in plants is of the same kind as in animals, since electricity kills and crushes them as it does animals. Plants may be also put to sleep by washing them in opium dissolved in water, and hydrocyanic acid destroys their vitality as quickly as it does that of animals.

NOTES AND QUESTIONS—VARIOUS.

Drawing-room Vase.—Last week we filled a large vase as follows, viz, Lily of the Valley in the centre, and Scarlet Duc Van Thol Tulips and Scilla sibirica round the edge, alternated with Maidenhair Fern, a combination both effective and pretty.—R. G., *Priory Gardens, Warwick.*

Double-flowered Chinese Plum.—Plants of this furnished with thousands of white blooms are now very useful for cutting from, and well deserves more attention than they generally receive. Plants introduced into heat in the end of December have been in full bloom for three weeks.—R. GREENFIELD, *Priory Gardens, Warwick.*

The Newtown Pippin as a Cooking Apple.—In illustration of the proposition that the best eating Apples are often also the best cooking Apples, I wish to say that I have lately tried this Apple—and by no means good specimens of it—as a cooking Apple, and found it the best I had ever used, deliciously rich, and withal having a clean and most pleasant flavour. It is, in a word, perfect, without the addition of sugar or other accompaniment.—W.

Celastrus scandens.—What does "W." mean (see p. 165) by "properly growing" this plant? Many years ago, I raised a batch of seedlings of it, which have been planted in different situations, both here and elsewhere, yet none have ever fruited, or even bloomed. Perhaps "W" can tell me the reason I find it to be a plant that is easily propagated; for if, in transplanting, pieces of the root be left in the ground, they become plants like the Bramble and others.—J. M.

Rose Princess Louise.—In the description of my seedling Rose Princess Louise (see p. 156), it is said to have been raised between Mrs. Rivers and Madame Vidot a statement that is not quite correct. It was a seedling from Madame Vidot fertilised by the blush white Hybrid Perpetual Virginale, and was an effort made to fulfil the requirements for a prize for a white English raised seedling Rose at the York show, and although it is not perhaps the freest-flowering Hybrid Perpetual, it is the freest-flowering white Rose in that class. —THOMAS LAXTON, *Stamford.*

The Beech Aphis.—I send you a portion of bark taken from a Beech tree. Would you inform me what the disease is with which it is affected, and the best way to get rid of it? So thickly does it cover the bark that many of the trees have the appearance of having been whitewashed.—Z. J. A. [It is the exudation from a species of Aphis named Adelges Fagi. When plentiful, as in your case, and on large trees, we know of no remedy; on a small scale, it may be removed by the usual processes of brushing and painting with insecticides. —A. M.]

Early Pruning v. Late Pruning.—In the early part of December I had a quarter of Gooseberries pruned, to enable me to have the ground amongst them manured and dug. This I have found to be a great mistake, as it gives the birds a better chance to take the buds, and, upon examination, I find that the trees pruned have lost one-half of their buds; while others close by, unpruned, have been left untouched. The same thing, too, holds good in the case of Currants, Plums, and Cherries—kinds of fruit of the buds of which birds are fondest. Therefore autumn pruning is an operation to be guarded against as regards such trees. I used formerly to prune early in March, and have generally had good crops.—H. R. MANN, St. Vincent's, Grantham.

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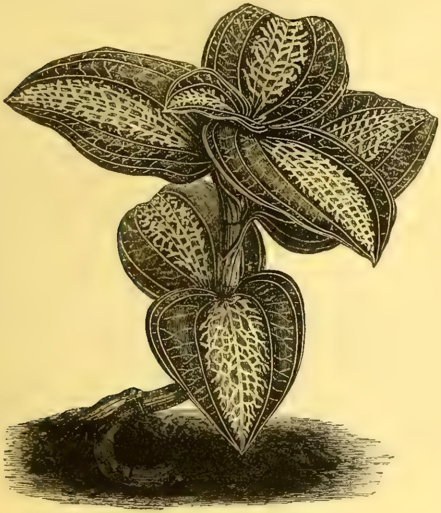
"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

KING PLANTS FOR TABLE DECORATION.

The Anæctochili, or King Plants, as they are sometimes called, belong to one of the most beautiful classes of fine-foliaged plants; they are mostly dwarf and compact in habit, and a few of the free-growing kinds among them are very suitable for table decoration. The foliage of all the species is superb; in some the ground colour is a rich olive or purple, interspersed with a network of gold; in others it is a bright velvety-green, netted with silver, which, under an artificial light, is strikingly effective. The reason why the Anæctochili are so seldom seen in cultivation arises from the idea that they are difficult to grow except in a high temperature. This is a mistake, as many of the most useful varieties of them, especially those that are suitable for table decoration, succeed well in a vinery; indeed I have grown capital specimens under the following treatment:—The plants should be kept cool and dry during the winter months. I never give any water from the commencement of October to the early part of February, the atmospheric temperature being maintained at about 60° at night, and 65° by day. As soon as the plants begin to move, they send up a bloom-spike which should be removed with the point of a sharp knife, an operation which causes the plant to break from every joint; in fact, I have had A. argenteus and its variety pictus strong enough to push fourteen shoots from a single stem. As soon as the young shoots have made an inch of growth, I take a sharp knife and cut the old stem through between each joint, keeping the bell-glass under which they are placed close for a fortnight or so, when they may be potted off, either singly in small pots, or several in a pot of a suitable size. The pots should be filled with broken potsherds to within 2 in. of the rim, and covered over with freshly gathered Sphagnum, filling up with fibrous peat, liberally mixed with clean potsherds and silver sand. Lift each plant carefully out with the old piece of stem adhering to the young plant; if there should be any appearance of decay after re-potting, remove it with a sharp knife at once, and sprinkle the cut with a little fresh lime which prevents further damage. In re-potting surface with Sphagnum Moss, which, if pressed down at interval as may be required, has a pretty effect. Then give the whole a gentle watering, and keep the bell-glasses closed until the young plants have become established, when a little air may gradually be given by placing small pieces of wood under the edges of the bell-glass, so as to lift it up equally all round, always avoiding cold draughts. As the plants attain full growth, the bell-glasses may be taken off when the vinery is closed, a practice which tends to ripen the stems well, and which prepares them for the cold winter months. Let them have all the light possible, but shade them from the sun. Never water or syringe them overhead, as the water gets into the axils of the leaves, and sometimes causes them to damp off; and, as the plants are to be used for the table, it is better to be rather on the side of dryness than otherwise, when, with care, they may be used without the plants sustaining the least injury. By getting the growth matured early in the autumn, and giving the plants a cool dry rest in winter, the following varieties may be employed for table decoration, and maintained in vigour for many years, viz.:



An Anæctochilus or King Plant.

Anæctochilus (Physurus) argenteus. — A free-growing species, the leaves of which are from 2 to 3 in. long, and prettily marked with silvery veins on a light green ground.

A. argenteus pictus.—A distinct, vigorous-growing variety, the leaves of which are from 3 to 4 in. long, each leaf having an edging of dark green, with a beautiful band of frosted silver down the centre. This is one of the best for table decoration, as the bright silvery band shows itself off to advantage under artificial light.

A. maculatus.—This is a pretty kind, the leaves of which are $2\frac{1}{2}$ in. long, and spotted with white parallel with the midrib, on a dark green ground.

A. latimaculatus.—A distinct and free-growing variety, with dark green leaves and silvery markings.

A. Petola.—Of this there are two varieties, one more distinct in the marking than the other; both are, however, pretty; it is, in short, the best of the green-leaved varieties. It grows freely and increases fast; its leaves are $2\frac{1}{2}$ in. long, overrun with gold in well-defined lines, on a pale green velvety ground. It grows freely in a vinery or close greenhouse.

A. striatus.—This grows from 4 to 5 in. high, and has leaves from 2 to 3 in. long, dark green, with a broad band of white down the centre.

A. intermedius.—A free-growing kind, with a good constitution. Its leaves are from 2 to 3 in. long and $1\frac{1}{2}$ in. broad, with a dark olive velvety surface, beautifully veined with gold.

A. setaceus.—One of the oldest kinds in cultivation, and still one of the handsomest, its leaves being of a beautiful velvety green, about 2 in. long and $1\frac{1}{2}$ in. broad, and richly netted with gold. Of this there are several varieties, all remarkably handsome and free growers.

A. xanthophyllus.—This is distinct from any other variety in cultivation. It grows to the height of 4 or 5 in; its leaves are from 2 to 3 in. long, and $1\frac{1}{2}$ in. broad, with a dark velvety green ground, striped with broad orange and green down the centre, and beautifully covered with a golden network. It is a free grower, and as a decorative plant one of the best.

A. Dawsonianus.—A useful and ornamental species, the leaves of which are almost black, very glossy, and beautifully covered with a crimson network. Its flowers, which are white, are freely produced and very useful for bouquets.

Waterdale. James Smith.

Plant Collecting in Corsica.—My Corsican tour was in all respects a great success. I gathered upwards of 100 plants in flower, Alpines and others. Corsica geologically is very varied in formation; granite is the foundation, but, coating a portion of the granite eastwards, is carboniferous and other allied limestone. Think of Crocus minimus—a little darling—opening in January, and two lovely Alliums, rose and white (subhirsutum and neapolitanum), in full bright enticing flower. One friend is so delighted with my account of Corsica, that he talks of sending out a collector at once to canvass the Restonica Valley, where the lovely Cheilanthes odora teems, as does Gymnogramma leptophylla, finer than it grows in the Channel Islands. I shall make you long to have been with me, when I talk of N. Marantæ, N. vellea, Pteris cretica, S. Hemionitis, P. lusitanicum being among Corsican Ferns, and rarities among the Phænogams, that I have not time to specify.—Peter Inchbald, *The Lodge, Hovingham, York. Feb.*, 1876.

AN EASY WAY TO INCREASE HYACINTHS.

I have always found it difficult to obtain a sufficient quantity of yellow Hyacinths. Dealers rarely ever include more than one bulb of this colour when you send for a dozen, and often that turns out to be only a dirty buff or nankeen colour. A few years ago, having obtained a really good bright yellow variety, I determined to propagate it, which I did in the following manner:—After the bulb had flowered in a large pot, and the foliage had turned yellow, which it soon does if you place the pot on its side out-of-doors, and cease giving water, I took the bulb out of the pot, twisted the foliage off, and also the roots. I then laid the bulb on a dry border, under a south wall. In a short time it began to split open and to produce small bulbs. About the end of September I made up a small bed containing a quantity of decayed cow-manure, mixed with soil and sand. In this the little bulbs were planted 6 in. apart the first year, and every year afterwards 9 in. apart. Some of them showed flowers the first year, but these were nipped out as soon as they made their appearance. The bulbs were lifted every year for three seasons in July, and they were not allowed to flower, which had the effect of strengthening their growth. After growing them in this way for three years, I was rewarded with some very fine bulbs, which flowered splendidly the following season. After blooming in pots, I always cut the flower-spike out as soon as its beauty is over, and remove the pots to the reserve garden, plunging them quite up to their rims. Sometimes the bulb will be found to be quite plump, especially if it has not been forced, and in that case it may be bloomed again the following season; but as after blooming it naturally throws out off-sets, the best plan is to grow these in separate little beds, labelling them so as to indicate their colour and name.

A Hyacinth bulb of any favourite sort or colour may be increased in the manner just described. In Holland, as with us, the Hyacinth, when it has grown to its full size, produces its finest spike of bloom, and then furnishes offsets. These Dutch cultivators grow in the manner just related, and, at lifting time, pick out the largest and heaviest bulbs for the English market. It is true, that a full-grown heavy bulb will produce a good spike of bloom in water, but that bulb is worthless afterwards, except for purposes of propagation. Hyacinths should be taken up every year, whether grown in beds or in borders, and the offsets of any good variety should be planted in a reserve bed made up of rotten cow-manure, leaf-mould, and sand, until they attain a sufficient size to be again grown in pots or glasses. The consumption of Hyacinths in this country is enormous, and the annual cost of procuring a good collection for a large establishment forms a considerable item in gardening expenditure. Hyacinths bought at auction sales nearly always disappoint the purchaser, inasmuch as they are made up of the refuse of the Dutch nurserymen's stock, and consist of only such sorts as have small bells and short flower-spikes.

As regards cultivation both in pots and glasses, little need be said. October and November are the best months for potting, and, whether grown in pots or glasses, they should be kept in a dark place until plenty of roots have been made and the bulbs have shot about ½ in. In potting, remember that the soil cannot be too rich. The pots should then be plunged up to their rims in the open ground, and covered a few inches with ashes or cocoa-nut refuse until the plants begin to shoot. Town growers might place their pots in a dark cellar, or, if in glasses, in a dark cupboard. For window culture, three bulbs may be grown in an 8-in. pot filled with rich compost. Good rich soil without forcing will produce fine colour, stout growth, and noble spikes of flowers. The Hyacinth always well repays any trouble that may be taken with it, provided good bulbs free from disease are planted. If grown in water, remember that rain-water is best, and that it should be changed every week. The glasses should be dark coloured. Hyacinths will bloom in even the darkest kitchens in our large towns, and if the bulbs be good, even ill-treatment will not destroy the flower. H. Taylor.

Bedale.

PRIMULA ALTAICA *versus* P. VULGARIS GRANDIFLORA.

"A. D." (see p. 122) has suggested that the name P. vulgaris cœrulea would have been a very appropriate title to give to this really beautiful but misnamed plant. Permit me to state, which I did not in my article on Primroses, that there was a Primrose cultivated in these gardens some twenty-three years ago to which that title was given, and most deservedly so, for its colour was much nearer a decided blue than the one so long known under the name of P. altaica. Whether it be in existence at the present day or not, I am not aware, but much fear it is not. On referring to my memoranda I find I sent away two plants, but in reply to inquiries I have made, I find they are dead, and have been for years. Undoubtedly it was the plant that par excellence should have had the name P. vulgaris cœrulea applied to it—possibly it may yet be in existence, and if my article on Primroses should be the means of discovering its whereabouts, then all I have to say is, that, as the writer of the article, I should consider that I have had a rich harvest. "B." (see p. 176) alludes to an intermediate form between the old species P. cortusoides and the japonica variety amœna. Since writing my article on Primroses, I have come across some notes taken at the Manchester Exhibition a year or two ago regarding a form of the latter, which was exhibited under the name of P. cortusoides amœna var. intermedia, and which appears to agree with the one he alludes to as figured in the "Magazine of Botany" under the title of P. Pallasiana. I have no opportunity of referring to the work named, but I remember distinctly being struck with the appropriate character of intermedia as applied to it. Seeing, therefore, what we have done for the Primula sinensis as compared with the old original type, we ought not to begrudge a similar honour to the Japanese in respect of what they have done for the old Tartarian species P. cortusoides, and we ought further to bear in mind that what we have succeeded in doing in a score of years they may possibly, as regards their species, have occupied a score of centuries. In their "History of Gardening" Parkinson and Gerarde in producing may be looked upon as children, whereas we consider them as representing almost the ancient of days. Allow me, in conclusion, to thank the various contributors of Primulaceous lore, which collectively forms a most important addendum, and one which will be fully appreciated by your readers, to my article on Primroses. There are, however, yet two or three names that I have in my mind's eye who have made themselves familiar with our European Primulas at last in their native habitats, and from whom some valuable information may yet be forthcoming.

Hull Botanic Gardens. Jas. C. Niven.

NOTES ON OXALISES.

I should feel much obliged if any of your correspondents could give me some information concerning the following species of Oxalis and the names of their authors:

Panthiola
vennsta
concinna
isopetala
tridactylites
longisepala
bonariensis
fragrans
Ehrenbergii
lilacina
controversa
Tweediana
lutea
odorata
Coppolerii
Consolei
Compalerii
majorana
granulata
lactiflora

Oxalis Panthiola I received from the Edinburgh Botanic Garden—it is certainly O. pentaphylla (Bot. Mag.). O. concinna (received from Mr. Tyerman) is O. versicolor, as is also O. discolor (received from the Botanical Garden of Montpellier). O. isopetala (from the Botanical Garden of Algiers) is O. flava (L.). O. tridactylites (from the Botanical Garden of Montpellier) is O. hirta (Jacquin), as are also O. longisepala (from Edinburgh), O. canescens (from Paris), and O. multiflora (from Edinburgh). O. bonariensis (from Edinburgh) is O. floribunda (Lehmanni), a very common hardy Oxalis, which I have received under the names of O. arborea, O. Tweediana, O. multiflora, and O. controversa. O. fragrans (from Botanical Garden of Algiers) is O. livida (Jacquin). O. Ehrenbergii (from Edinburgh) is O. cernua. O. lilacina (from Mr. Maw), O. lactiflora (from Messrs. Hooper), and O. granulata (from Botanical Garden of Edinburgh) are O. incarnata (Jacquin). O. lutea (from Kew) appears to be a stemless variety of O. carnosa (Molina); this last plant I got from the Colchester Bulb Company, under the name of O. arborea lutea. O. odorata is a distinct species (received from the Colchester Bulb Company), with fragrant lilac flowers, and the habit of O. floribunda. O. Coppolerii, O. Consolei, and O. Compalerii (from the Botanical Garden of Algiers) do not appear to be distinct from O. asinina (Jacquin), but I have not yet been able to flower them. O. majorana (from the Botanical Garden of Algiers) appears to be identical with O. fabæfolia (Jacquin).

The correctness of the names of the species of Oxalis is very difficult to preserve in a collection, owing partly to the elasticity of the seed-pods, scattering the seeds in all directions, and also in the minute bulblets falling amongst the earth used for potting. Jacquin has also added to the confusion of the genus by creating so many species; Harvey and Sonden in their "Flora Capensis" have united a dozen of his species under O. variabilis (Lindl. Bot. Reg.), four under O. tubiflora (Jacquin), and three or four under O. hirta (L.). Jacquin has left us a legacy of a model collection of beautifully executed plates to perpetuate his fancies, in the same way as Jordan has done with the creations of his imagination. I have been employed for several years in making a living collection of the genus Oxalis, and have received from different sources nearly ninety species by name, which, when eliminated, may amount to about fifty distinct species. Giles Munby.

The Holt, Farnham.

Dictamnus Fraxinella.—While fully endorsing all that Mr Williams has said (see p. 175) as to the value and beauty of the Dictamnus as a herbaceous plant of the very first quality, and one whose absence in any collection must be looked upon as a most important blank, permit me to suggest that the generally accepted name, and that adopted by Linnæus himself as the title for the genus, was the Dictamnus, the specific name being Fraxinella. It is in point of fact the Ash-leaved Dictamnus, whereas your correspondent has reversed the titles. The generic title Fraxinella would literally mean a small sort of Ash tree, and seeing that it bears no relation, structurally speaking, to the Ash, although as a species the title may be appropriate enough, it is better to retain its true generic title of Dictamnus. In addition to your correspondent's remarks, I might add that its seeds, even when sown as soon as ripe, have, according to my experience, the happy, or rather unhappy, knack of vegetating freely and dying off equally freely; a more certain mode of propagation is by means of the fleshy roots, which, if cut into pieces in the spring, will strike freely and form buds much sooner than the seedlings.—J. C. N.

Rhododendron argenteum.—I paid a visit to Osberton a short time ago, and was much struck with the magnificence of a plant of this Rhododendron. It was about 15 ft. high, and bore some sixty trusses of bloom, some of them 15 in. in diameter, truly a grand sight. A whole house at Osberton is to be set apart for the growth of this and other Rhododendrons, such as Nuttalli, Aucklandi, and Falconeri among tall-growing kinds, and for Princess Royal, Jasminiflorum, Princess Alice, and Veitchianum among dwarf kinds. These, well placed as to contrast, cannot fail, when in flower, to be highly effective.—W. Atkinson.

Dead Sea Apples.—There grows on the ramparts and old Castle of Bastia, a Nightshade that yields the so-called Apples of the Dead Sea. They are doubtless the work of a Cynips, that pierces the berry and utilises it for the food of its offspring. I looked and inquired in vain for evidence of this Cynips. The berries were tolerably plentiful on the scrubby plants, yellow and pendent, and slightly larger than our Potato-apples. The seeds were possibly first introduced into Europe in the soil, probably with the Date or Pomegranate, and this may account for the absence of the insect. The shrub itself is about the size of a Gooseberry bush, prickly alike on the leaves and stems, with the branches strangely contorted and overlapping. The flowers are of a dirty white. The plant becomes historically interesting, bearing as it does evidence of Saracenic rule in the Mediterranean Islands during the Middle Ages; and during my recent tour through Corsica I noticed other vegetation that similarly indicated Eastern invasion and occupation.—Peter Inchbald, *Hovingham Lodge, York.*

Models of Flowers.—Professor Maisch exhibited the other day a series of botanical models, made by Mr Robert Brendel, of Berlin, Germany, which have been recently imported, to be used for the illustration of lectures on Botany and Materia Medica. These models are faithful representations of the flowers and other parts of plants belonging to different Natural Orders, magnified to such an extent that the different parts can be readily seen at some distance; they are painted in the natural colours of the organs which they represent, and many of them can be taken apart so as to exhibit their internal structure. Among the models shown, were those of Aconitum Napellus, Viola tricolor, Conium maculatum, Hypericum perforatum, Asperula odorata, Digitalis purpurea, Colchicum autumnale, Atropa belladonna, the flowers of the Potato, Strawberry, Apple, Cherry, and others; the entire series comprising sixty-five numbers, of which twenty-five consist of from two to four distinct models.

LANCASHIRE SHOW GOOSEBERRIES.

About sixty years ago, when trade was prosperous in Lancashire and when workmen could earn about 15s. per day, many devoted their spare time, of which they had more on their hands than workmen now-a-days have, to growing Gooseberries. They also raised new varieties every year to which they gave fanciful names, and Lancashire became the leading county for Gooseberry shows, for which it is still famous. Nottingham and Derby were also noted places for Gooseberry shows, rules for which were carefully drawn up, and prizes offered, consisting of silver cups and similar awards. The fruit was generally exhibited in four classes, viz., red, white, green, and yellow. The judges had no great difficulty in deciding who were the winners, they merely weighed the Gooseberries, and wrote on a card their weight with the name of the winner. Some would weigh as much as from 20 to 30 dwts., and occasionally more. London, a red kind, is often grown above 30 dwts., and Catherine, yellow, 29 dwts. The heaviest berry of any colour always took the premier prize. Weight of the fruit was the principal object aimed at, and many were the nostrums used to attain the desired end. After the show, its promoters always spent an agreeable evening together. In some of the nurseries in Lancashire, Gooseberry propagation is still made a specialty. Strong soil is the best for bringing the Gooseberry to perfection, but plenty of manure effects wonders in any soil. Gooseberries should be grown in an open airy situation, and the trees should be liberally manured every year. They should not be planted at a less distance than 6 ft., and the ground should be stirred deeply and well manured. The roots should be carefully spread out on the top of the newly-prepared soil, and covered about 3 in. deep, treading the soil down gently with the foot. Many of the show Gooseberries have bad habits of growth, throwing out long straggling shoots, and, in order to keep trees of this class in form, a wooden hoop is placed over them, supported by a few small stakes, and the long straggling shoots are raised up and tied to the hoop; others are trained to a few small stakes placed round the trees; the pruning consists in cutting out all weakly and unripe shoots, and such as cross one another, leaving two or three strong laterals on each main branch; the end or leader of each limb should also be left, if not too straggling, but, if so, it should be cut back to a good wood-bud. The fruit grows on old as well as new wood, but the finest is always produced on wood of the previous year's growth. In growing for exhibition, the long shoots of the previous summer are always preserved, and a good portion of the old wood is cut back in order to produce strong new wood for the next year's crop. When the trees appear to be making too much wood in summer, numbers of misplaced shoots are cut entirely away in June; more sap then flows to the fruit, which afterwards begins to swell. The new shoots are tied to the hoops or stakes, and the trees are thus kept in the form of a cup. Growers for exhibition do not prune on the spur system having found by experience that a well-ripened stout shoot always produces the finest fruits. The latter should be well thinned as soon as they are as large as Peas. In about a fortnight they are thinned again, whether wanted for tarts or not; and as large fruit is the object aimed at, about half-a-dozen to each tree are only allowed to remain. The fruit left to ripen is swelled off by fastening small cans of water on the branches, into which the brown calyx of the fruit hangs, so as just to touch the water. The fruiting branch has therefore to be tied very firmly, so that no wind can possibly move it. Should the weather be dry when the fruit is swelling off, liquid manure is applied, and generally also throughout the growing season abundance of water is given, so as to prevent the berries from cracking, which otherwise sometimes happens after a heavy shower. The trees should be heavily surface-dressed every winter, and in February the dressing should be forked not dug in, the aim of the cultivator being to keep the roots near the surface. For exhibition purposes, trees not under four years old are best, and these are rarely retained by successful growers after they reach their eighth year.

The following are a few of the heaviest and best flavoured amongst the large kinds, viz., Moreton Hero, red; Napoleon, red; Slaughterman, red; Thumper, green; Catherine, yellow; London, red; Naverino, green; Dan's Mistake, Hero of the Nile, greenish white; Jolly Fellow, red; Turn-out Rifleman, red; Ware's Nelson, green; Ringer, dark yellow; Shiner, light green; Trumpeter, orange yellow; Sportsman, red; Birdlime, yellow; Bonnie Rodger Duckwing, yellow; Lion's Provider, bright red; Advancer, green; Whitesmith, Miss Nightingale, greenish white; Drill, deep green; Queen of Trumps, greenish white, smooth. The three Champagnes are the richest in flavour; they are of medium size and excellent bearers; colours, red, green, and yellow, all a little hairy. For preserving, Warrington, Aston, and Ironmonger are the best. H. T.

Nature gives us volumes of fruit, which she always prefaces with flowers.

Renovating Old Apple Trees.—Having had the management of an orchard for some years, and finding that some of the oldest and finest trees in it were shy bearers, or bore small and comparatively worthless fruit, after mature consideration it was determined to improve, if possible, a few of the oldest trees, some of which are about seventy years of age. It may have been remarked that when trees of considerable size and age are headed back and regrafted, they grow vigorously for a year or two and then die. The cause of this disaster is doubtless the check given to the trees by severe heading down, the head being disproportionately small compared with the roots which, during the preceding year, supplied a large top. The latter having been removed, the roots become comparatively dormant, and many of them die or become deceased, thus affecting the whole tree, and in a few years death is the result. In renovating old trees, the best plan is not to head them too much back, but to graft them liberally; on large old trees as many as 100 grafts may be put on each. Under such conditions the whole will grow and make healthy vigorous shoots. All the shoots made below the grafts on branches should be allowed to remain, in order to encourage and keep up a healthy root-action, but they should be gradually removed as the grafts increase in size and form a head. The clay used in grafting should remain on until it falls off of itself, as it forms a protection against winds and storms, and by using dry leaves of the Water Flag, cut and stored the previous autumn, for tying, no harm is done to the bark, as is the case when bast is used. The Flag rots and bursts as the grafts grow. Trees for grafting should be headed back about this time, and grafted at the end of March or beginning of April. Grafting is a good way to increase rapidly any approved kind of Apple. The grafts should be of a stronger growing kind than the stock, or at all events not less vigorous, as strong kinds have a beneficial effect upon the ultimate vigour of the tree. The Margil is an example of a weak-growing orchard Apple tree, although it is one of the best dessert kinds, while Autumn Pearmain, Wellington, Blenheim Orange, Gravenstein, and Warner's King are among the best free-bearing and strong-growing kinds.—J. Garland, *Killerton.*

Lee's Prolific Black Currant.—This, says Mr. Saul in the "Florist," is the best variety in cultivation. It is large in size, a great bearer, and hangs long on the bushes. When quite ripe, it is excellent for dessert. There is a sort here very like it in every respect, which I have exhibited for many years at the local shows, and for which I have received many prizes, but I consider Lee's Prolific to be a better variety. I would strongly recommend it to all intending planters, as I feel certain that, under ordinary management, it will give satisfaction. When good varieties of fruits can be had, inferior sorts should never be planted, as they occupy the same space and require as much labour in after-management as good ones. Though the Black Currant will grow and bear well on any tolerable garden soil, it does best on well-enriched land. After the bushes come into regular bearing condition, they should annually receive a good dressing of rotten manure, which should be lightly dug in; deep digging should be avoided, as the bushes form a great quantity of fibrous roots near the surface, which deep digging seriously injures.

Gilbert's Victory of Bath Melon.—To avoid misapprehension, allow me to say, in reply to "M. T." (see p. 183), that in applying the term "not prolific" to this Melon, I used it in a comparative sense. When one finds that a certain variety constantly bears twice as many fruit as another variety—other things being equal as regards culture—I describe the one as prolific and the other as not so—I think that 100 per cent. difference is something. "M. T." says, "without removing the plants from the pots in which they were sown, I plunged them in 11-in. size," and the pots were filled with strong soil and well rammed, and the plants allowed to make 6 ft. of growth before stopping. Now I submit that if the very shyest-bearing Melon refused, not only to bear, but to bear freely under such "high-pressure" treatment, either the Melon or the cultivator must be sadly to blame. Really "M. T.'s" testimony is but "faint praise," and all but corroborative of my statements. I have been a buyer of all Mr. Gilbert's Melons, I think, always taking his name as a guarantee in such matters, and I feel sure he will not take it amiss to have both their good and their bad qualities pointed out.—J. S.

A Use for Whiskey at last.—For exterminating mealy bug, a correspondent of "Moore's Rural," recommends common high-proof whiskey. With a small soft brush one can soon clean the bugs from 100 plants, no matter how badly infested. Dip the brush into the whiskey, and then let a drop or two fall upon a cluster of mealy bug, and they will disappear. There are some very delicate kinds of plants which the whiskey will injure if used too freely; but there is not much danger in its application to the ordinary kinds cultivated in greenhouses. Notwithstanding this we should not advise anybody to add whiskey to their garden stores, as common alcohol will do as well or better.

NOTES OF THE WEEK.

—— The pretty Star and Common Anemones that at this season dot the warmer valleys on the French shore of the Mediterranean may now be seen in bunches in Covent Garden. They travel better than might have been expected.

—— Messrs Jackman, of Woking, have made arrangements to hold another exhibition of Clematises in the Royal Botanic Society's Garden, Regent's Park. It is to be opened on the 1st of May next, when a fine display of these showy plants will doubtless be made.

—— Mr. Peter Henderson, writing in the "Gardeners' Monthly," warns people against the mistake of painting hot-water pipes in greenhouses with gas tar, which often leads to great damage. It is needless to add that it should not be used on any other surface in glass-houses.

—— In some investigations into the question of the growth of plants as affected by latitude, Hoffman states that from numerous observations in Central Europe we may conclude, as an average, that a difference of latitude of one degree causes and implies a delay or retardation of 3¾ days of the various steps in the development of plants, especially as regards their blossoming in spring.

—— Mr. Dean's seedling coloured Primroses are already very attractive in his grounds at Bedfont. The introduction of these richly-coloured varieties of our British Primrose into general garden cultivation is much to be desired, as no plants are more easily grown, and none are more suitable for the wild garden, herbaceous borders, and the fringes of shrubberies.

—— It is said that about 15,000 bunches of Violets are sold every day in Paris. Their sale amounts to 500,000 francs a year. They are not in so much favour now as they were during the Empire, for the Violet is looked upon as an emblem of the Bonapartes. Great numbers of persons live by its sale and its culture in the sandy fields to the south of Paris.

—— At a meeting of the Royal Horticultural Society, held on Thursday last, the "Amended Summary of the Privileges of Fellows for 1876" was unanimously adopted. Among newly introduced features, the following will doubtless be interesting to gardeners:—"Non-transferable tickets at 10s. 6d. per annum, admitting to all shows, scientific meetings, and lectures of the Society (but not to promenades nor on reserved occasions), and to the Chiswick Gardens on week days, will be issued to *bonâ fide* gardeners recommended by two Fellows."

—— Nothing can be more graceful than the species of Tamarisk called Tamarix plumosa, which is still uncommon though easily propagated. Its numerous slender branchlets resemble the curled plumes of the ostrich. It flowers in August about the same time as T. indica. The flowers, which are disposed in dense erect panicles, have an airy lightness, which adds much to the elegance of the foliage. Isolated on a lawn, or in a large park, T. plumosa forms a compact mass of the most pleasing appearance. It is, according to the "Revue Horticole," quite as hardy as T. indica, and should be propagated and treated in precisely the same manner.

Cresses and their Improvement.—I find that the Curled Cress, if neglected, is liable to degenerate to the common sort; but, if properly treated, it is capable of being improved in a very high degree. This is effected by selecting, every spring, a number of the most perfectly curled plants as soon as they can be discovered, and pricking them out at 5 or 6 in. apart from each other, and at a distance from the common sort. The seed from these plants may be considered as stock seed, and from the plants of this seed should all the succeeding plants be annually selected, taking care, if possible, to make choice of those only which are more thickly curled than the stock from which they have been obtained. The Golden Cress is rather slenderer in growth than the common Cress. It is very dwarf, and is consequently short when cut. It has a mild and delicate flavour, and affords a pleasant addition to our stock of small salads. It should be sown and managed in the same manner as the Curled Cress.—Alpha.

Where is the grave of Sir Artour Kellyn?
  Where may the grave of that good man be?
By the side of a spring on the breast of Helvellyn,
  Under the twigs of a young Birch tree!
The Oak that in summer was sweet to hear,
And rustled its leaves in the fall of the year,
And whistled and roared in the winter alone,
Is gone—and the Birch in its stead is grown;
      The knight's bones are dust,
      And his good sword rust—
His soul is with the saints, I trust. —Coleridge.

THE FLOWER GARDEN.

THE BEST TREE PEONIES.

The following list contains some of the very best varieties of tree Peonies or Moutans at present in cultivation; I obtained it from my friend M. Charles Verdier, of Paris, who makes Peonies his special study; among them, as will be seen, are few novelties, but M. Verdier states that the newer varieties are generally inferior to the older kinds:—Athlète, large, double, lilac; Bijou de Chusan, pure white; Carolina, bright salmon; Colonel Malcolm, violet; Comte de Flandres, very large, rose; Confucius, deep pink; Elisabeth, deep scarlet, very double; Farezzii, large, pale lilac striped with violet; Fragrans maxima fl. pl., pale rose; Lambertinæ, blush rose petals, tipped with violet; Louise Mouchelet, large double pink; Madame de Sainte-Rome, bright lilac-rose; Madame Stuart Low, bright salmon-red; Marie Ratier, large, rose; Odorata Maria, pale rose; Prince Troubetskoy, very large, double, deep lilac or violet; Purpurea, a deep amaranth, semi-double kind; Ranicrii, bright amaranth; Rinzii, very large, bright rose; Rosini, a semi-double, brilliant rose-coloured variety; Rubra odorata plenissima, very large, double, lilac-rose; Souvenir de Madame Knorr, large, double blush; Triomphe de Malines, large, violet, a colour which deepens at the base of the petals; Triomphe de Vandermaelen, very large, and double violet-shaded rose; Vandermaelii, blush, almost white; and Van Houttei, large, double, carmine. Peonies are plants of easy culture, accommodating themselves to every description of soil; they are very hardy, abundant flowerers, and very varied in colour. The best time to plant Peonies, both tree and herbaceous, is September, and, if vigorous plants be selected they will readily produce a few blooms the following season, thereby gaining a year over those planted in spring. They succeed better in a heavy soil than in one which is dry and light. Before planting the ground should be deeply dug, as they have long tap-roots, and if well manured all the better; but the manure should be well decayed, as, if fresh, it has a tendency to generate root Fungi. A shady airy situation is best for plants of a pale pink or yellowish hue, as bright sunshine injures their colours. In France tree Peonies are increased by means of root-grafting.

Double-flowered Moutan.

Single-flowered Moutan.

Versailles. A. Truffaut.

DOUBLE-FLOWERED POPPIES.

Double Poppies may be said to occupy the foremost rank among hardy annuals, so large and brilliant in hue are their flowers. They have, therefore, a most striking character, but are not nearly so much grown as they deserve to be, and it is probable a certain amount of prejudice may have been created against them on account of their unpleasant perfume and the shortness of the duration of their bloom, but their gorgeous colouring makes some amends for the comparatively short period during which they are in flower. The annexed engraving represents one of the best known Poppies, viz., Papaver somniferum, the double form of the Opium Poppy, which is so much grown in this country for its heads, they being extensively used for medicinal purposes. It generally grows about 2½ ft. in height, and varies in colour from white to deep crimson. The double scarlet, the double striped, and the double white are all varieties of this, and the flower-heads, being of great size. make a bold and striking effect when planted in masses. I have seen large beds of these double Poppies when in full bloom with the bright sunlight streaming down on them from an unclouded sky, and the effect was gorgeous in the extreme. By means of careful selection, a type of Poppy called the Pæony-flowered has been obtained from the foregoing, having large but very double broad-petalled flowers of various colours, from pure white to dark crimson. I remember on one occasion seeing some fine strains of this Poppy at the Dedham seed grounds of Messrs. Carter & Co., and it was a glorious sight. This is known in some seed lists as Papaver pæoniæflorum, and is certainly distinct enough to represent a type. The new Ranunculus Poppy is a double form of Papaver Rhœas of Linnæus, and is produced in varied colours; in this species the petals are more entire and rounded, and they reflex somewhat, hence the term Ranunculus-flowered. Like the foregoing types, this also has burst into a great number of colours, self and variegated. It is synonymous with the double form of the French Poppy of the seed catalogues, and is of dwarfer growth than either of the preceding. The German Poppies are the best representatives of the foregoing types, saved in colours, and sent to England in collections. Messrs. Carter & Co. state that their experience of Continental-saved Poppies points to the conclusion that varieties can be saved truer in England than on the Continent, and that is why they grow them in such large quantities in their seed-grounds. All these Poppies, being hardy annuals, can be sown where they are to bloom, but they should be grown in good soil in order to bring out in the fullest perfection their size and colour. The seed, being very small, should be sown thinly, and the plants eventually thinned out to 6 or 8 in. apart; this enables the lateral shoots to develop themselves, and allows of space for the flowers. In semi-wild places, and by the sides of drives, they can be made conspicuous features; and their cultivation is recommended to lovers of hardy border flowers. I know, indeed, of no other class of what may be called annual plants that will afford such a brilliant display as the different kinds of Poppy do in outlying beds and borders during the summer months. Viewed from a distance even their colours are strikingly effective. Q.

The Double Opium Poppy (Papaver somniferum fl. pl.).

PLANTS IN BLOOM AT HYERES.

The French have a saying that, "L'hiver expire aux pieds des Palmiers." If this be true, and from an experience of several winters I think it is so, it must at least be conceded that this year it dies hard, as the bitter winds and frosty nights of the last fortnight testify; but, when at Hyères, and sitting under the Palm trees or walking in the garden of the well-known firm of Messrs. Huber & Co., the sunny side of winter is certainly presented. The most striking thing under glass in this establishment is the array of Primulas for seed; just now these are in full beauty, and the intense colouring of the scarlet and magenta varieties must be seen to be appreciated. Some allowance must be made for the effect of the sun in the south of France, or disappointment may follow, as I know to my cost. The habit, shape, and size of the blooms are also excellent, and really seem superior to what I saw in Belgium, where much care and attention had been bestowed upon them. Among the striking objects in the garden are several tall columnar specimens of Yucca filifera, whose trunks are fully 3 ft. in circumference and 20 ft. in height. The beauty of some Beaucarneas and Dasylirions, models of health and vigour, suggested that to see such specimens in their full magnificence they should not be cramped in pots, as generally seen in England. Just beyond this green mass a large bush of Pyrus japonica (one scarlet flame of bloom) and several Acacias (one mass of golden flowers) made an effect that puts to shame any ordinary bedding, be it subtropical or carpet, and with a brilliant sky and sun overhead gave a summer glow that made it hard to believe the accounts of severe frost and snow received from Paris. A fine specimen of Latania borbonica laden with clusters of blue berries also attracted attention, but it showed symptoms of having suffered from the cold. Elsewhere, near the Place des Palmiers, an army of old women were gathering Carnations to send to Paris, the tree varieties being grown largely for that purpose; the flowers at present are small, but bright in colour and very sweetly scented. Roses and Neapolitan Violets are conspicuous by their absence, as well as Camellias, thus presenting a great contrast to what is grown at Nice and Genoa. A large and beautiful public garden has just been made on the slope of the hill, which will in a few years greatly surpass the puny squares and public gardens at Nice and Cannes, unless the winds should make havoc of the tenderer shrubs planted there, and must add to the charm of this quiet little town. Several of the Palms, for which it is so justly celebrated, are of great beauty and considerable height, and the apricot-coloured stalks of the bunches of Dates glow among the pale sea-green leaves till each seems to lend to each a double charm. The Almond trees, also in full flower, make a tender harmony with the silvery Olive trees and blue sky, and complete our chord of winter-colouring. E. H. Woodall.

Nice.

EFFECTIVE MIXED FLOWER-BEDS.

In effect, nothing surpasses a bouquet of flowers well arranged, for in it we can combine the different shades of colour most effectively. It is the same with a mixed flower-bed, which permits the use of subjects that cannot be introduced anywhere else. As a rule, the geometrical flower garden does not admit of the employment of great variety in the way of colour. Mixed beds, that is, beds filled with a variety of the usual bedding plants, annuals, and biennials, &c., arranged with an eye to effect, have this advantage, that they may at any time be introduced into the geometrical garden, among other beds, or masses of colour, without violating the style; while in gardens of small size, where the beds are few, as in villa gardens, they afford room for variety that could not otherwise be found—that is, where the geometrical style is adhered to. Indeed, it is only under such circumstances that they are admissible, for it is obvious that, as flower gardens are at present arranged, a series of mixed beds would only produce that monotony which their introduction is intended to relieve. Mixed beds may consist of a combination of colours of many shades; and sometimes a very telling effect is produced by the construction of only two or three which blend well together. It is essential under all circumstances, however, that the plants employed should be nearly all of the same height, as any inequality in this respect destroys the effect to a great extent. The best examples we ever saw were two beds laid out in front of the windows of a mansion. They had been well managed, and were much admired, yet the materials were few and simple. The beds were oval in shape, and, though the general effect was chaste and rich in the extreme, it could be seen that the most pleasing contrasts were due to the presence of purple and bright crimson German Stocks, Purple King Verbena, a few well-coloured Coleus Verschaffelti, Calceolarias, and scarlet and pink Pelargoniums, including a good proportion of Mangles' Variegated, planted judiciously on a groundwork of Cerastium tomentosum, which had been allowed to come into flower along with the other plants, the whole surrounded by a compact border of blue Lobelia. In such a bed the variegated Alyssum may be used in place of the Cerastium, only it is not so white, though more lasting. In order to bring the Cerastium into flower about the same time as the other plants, the earlier flowers should be shorn off, otherwise it will flower early in June. It should be planted in tufts, about 9 in. or 12 in. apart, and not so as to cover the whole surface of the bed, for most bedding plants thrive badly in a dense carpet of Cerastium, which reflects the heat and keeps the ground cold, besides robbing the surface of the soil with its numerous roots. It was allowed to encroach upon both sides of a strip of Viola magnifica here last season, but it so injured the Viola that it had to be cut back again and the Viola removed.

Another combination, which is unusually effective, is a mixture of Mangles' variegated Geranium and Viola cornuta. The Viola should be planted early in the season, say in March, and the Mangles (autumn-struck plants) in June or earlier, in order to produce flowers soon. It is the mauve colour of the Viola, and the delicate pink of the Geranium, which are most telling. This Geranium, though one of the very oldest varieties we possess, still stands unrivalled; it is so freely variegated, and we have no light pink to match it. A good bed may be formed by using it for a groundwork, on which to dot, here and there, single plants of brilliant Pelargoniums and Lobelias, or, what is better than the latter, Purple King Verbena, or any of the good purple Violas. A good general combination may be made at any time by mixing judiciously a miscellaneous collection of bedding plants; such mixtures are handy for replenishing vases or for bouquets, as one can get all that is required at the same place. We plant a border of this kind every year near the house, using up all the varieties which are left after the general bedding is finished. For planting such a border the different species should be arranged in lines according to their heights, taking care to have all the colours in each line. Thus, the tallest Geraniums, Verbenas, Calceolarias, Ageratums, &c., and the Verbena venosa will form the black line, and in the next will come dwarfer plants of the same, with Stocks, Asters, Mignonette, Alyssum, and Tagetes, &c., terminating in the front lines with such things as Lobelia, Alyssum, Gazania, dwarf Geraniums, Calceolarias, Golden Feverfew, and whatever else may be available for the purpose. Such herbaceous plants as Carnations, Phloxes, Anemones, Spiræas, Dielytra spectabilis, and a few more of the most effective kinds, may also be introduced with much advantage, or they may be the permanent occupants of the border, and the spaces between can be filled up in summer in the above manner. Be sure to plant thick enough, however, so that there may be a good show during the summer and autumn months.—"Field."

[In addition to the above style of bed with mixtures of plants of nearly the same size, various other kinds of great beauty may be made, either of many plants varying greatly in height, or of dwarf and tall plants. In fact, it is quite possible to make a garden wholly of mixed beds (if that were thought desirable), and yet have no monotony resulting, for each bed might be wholly distinct from its neighbour. Mixtures of bold subjects, such as Cannas and Dahlias, are very satisfactory when well done. Slender growers, too, like Gladioli, starting from a mass of low-growing plants, may also be made very beautiful. In fact, the improvement that may be worked in this direction is limitless.]

EARLY CROCUSES AND OTHER SPRING FLOWERS.

Crocus aureus is now in full flower in my grounds at Tooting; the peculiarity of this species is that it blooms before the foliage appears. Among varieties of the Cloth of Gold Crocus, one named Retii auritextus has short foliage and a dwarf compact growth; the outside of its petals is conspicuously coloured crimson-black. Another, under the name of stellatus, is larger in all its proportions. Of the Scotch Crocus there are several varieties, of which the one ordinarily sold has the outer petals striped, and the inner ones pure white. Another variety, under the name of argenteus, stands midway between the one just described and Crocus Imperati; its outside petals are fawn, striped brown; the inner petals pale lavender. A third, the C. biflorus of Parkinson, is similar to the one called argenteus, but smaller in all its parts. Crocus stellaris, a Dutchman's name for a rich deep yellow variety, has its outer petals striped with crimson-brown. Crocus sulphureus striatus sulphur, striped with crimson-brown, is similar to stellaris but much paler. Narcissus (Corbularia) monophylla is now in flower. Am I the first to have bloomed this in England? It is a little gem of the purest white. Among other plants in flower are—Leucojum vernum, Hepaticas (red and blue), and Iris reticulata var. Krelagei—this is the purple-red variety figured in the "Botanical Magazine."—P. Barr.

THE FŒTID HELLEBORE.

This well-known old-fashioned plant is one of those whose charms do not secure them a place in borders of hardy flowers, and yet it is too good to be ignored altogether. In very small gardens it has few claims to a place, but in large ones those who cast it out may some day find themselves admiring a graceful tuft of it in a copse or shrubbery in early spring, at which period it is most attractive. The best place for it generally is in semi-wild or rough places near to or in the pleasure ground, or in smaller gardens in the shrubbery. It is scarcely necessary to add that the odour is very offensive from broken portions of the shoots—another reason for allotting it a place among the wildlings.

Helleborus fœtidus.

THE FEATHER GRASS.

This very elegant Grass is a well-known, but still not a very common plant. The genus to which it belongs contains many varieties, all of which are more or less interesting or ornamental, but not one of them approaches in elegance or beauty the Stipa pennata. Though sometimes said to be British, it is, in reality, a native of the south of Europe, where, owing to the vast quantities of it imported in a dried state, it must be grown largely. After all it is only when gathered, and the awns collected in bundles, that its beauty is seen, bunches of it almost equalling in beauty the tail-feathers of the Bird of Paradise. I have for many years used the awns of this Grass to give a finish to vases or baskets of flowers in the following manner:—I procure a quantity of stout Wheat straws, stiff and unbroken, cut them into lengths, say, of a foot or so, and into one end of these little straw cylinders I insert from six to ten of the feathery awns of the Stipa in a radiating direction. I thrust the straws thus charged with awns pretty freely into vases or baskets of cut flowers until the straw is quite hidden, when the silvery awns, rising out of and waving above the flowers with which they are associated, add a grace and a charm to such floral arrangements that few would imagine. As regards culture nothing need be said, as it will grow in any soil or situation. Thos. Williams.

Feather Grass (Stipa pennata).

EARLY HARDY FLOWERS.

Nature is now beginning to feel the quickening influences of mild weather, and our earlier spring flowers are pushing up their welcome blossoms. The Snowdrop, the lovely blue Siberian Squill, the rich golden Crocus, the pale Primrose, the Violet, Wallflower, and other early flowers are fast bursting into bloom, and if no sudden blighting influences of frost and biting winds intervene, an early spring is likely to be the result. Of late years in gardens there has grown up a taste for what is known as spring flower gardening; a taste that has been developed out of the system of bedding out tender plants, in order to obtain a brilliant display of colour in summer; but which system simply left our gardens mere blanks, as far as flowers were concerned, for more than half of the year. To remedy this, some have adopted the plan of filling their beds and borders with hardy plants, that flower early in the year, and admit of being removed in time for the usual tender plants to be put out at the end of May. At Cliveden and Belvoir, spring gardening shows all that it is possible for skill and glass-houses to accomplish in that way. Both beds and borders are alive with beautiful hardy flowers, and words are inadequate to express the effect thus brought out. It is obvious, too, that what can be done so well in a large way can also be done well in a small way, and there is not a villa or cottage garden in the country that might not be radiant with floral beauty all through the early months of the year — especially April and May—provided the right material be obtained, and properly adapted. The double Daisy, for instance, yields several striking and effective colours, and produces bright masses. They are cheap, easily propagated, and only need removal to some cool spot for the summer, to make them available for next year's use. In the Daisy we have white, pink, red, and crimson hues, and also some mottled forms, but one of the most pleasing of all the Daisy family is the pretty crimson flowered kind, that has golden-blotched foliage, and which, even without flower, assists to render a garden cheerful during the dull winter months. There are also variegated Daisies, having pink and white flowers, but these are as yet somewhat scarce. Pansies also constitute another important class of decorative plants. Among these we have blues, whites, yellows, purples, maroons, and even blacks, as well as various other intermediate hues or mixtures, such as are found in the old Magpie, a pretty Pansy, having blotches of white on a purple ground. Pansies and Violas may be got fairly true from seed, but propagated plants of such distinct kinds as Cliveden Yellow, Yellow Boy, White Swan, Blue King, Blue Bell, Cliveden Blue, Cliveden Purple, Violet King, and many others, will give rich and defined masses of colour that will continue for a long period. Pansies are easily propagated by means of cuttings or by dividing the old plants. Primroses, both single and double, and Polyanthuses also furnish beautiful decorative material. The double Primrose includes about ten colours, but of these many are scarce. The commoner ones are the white, lilac, and sulphur, and these are pretty for small beds or as edgings to larger ones. Single Primroses now furnish myriads of colours, and good bedding sorts, white, sulphur, rose, red, purple, and crimson, are obtainable, and many of these are extremely beautiful; indeed, the finest-named forms of the single Primrose deservedly take the pride of place as the most beautiful of all hardy spring flowers. The white and primrose-coloured and crimson Polyanthus are also remarkably early, and yield rich masses of colour. A bed of white polyanthus, edged with a blue Pansy or crimson Daisy, produces a truly charming effect. Another great favourite is the beautiful early Forget-me-not, the Myosotis dissitiflora, which flowers from the middle of March to the end of April, and gives one of the loveliest masses of cerulean blue conceivable in flowers. This is at least a month earlier than the common kind. M. sylvatica is generally grown with the pink Silene pendula. These two plants, however, although they yield pretty and effective masses of colour, are seldom at their best until May. Wallflowers, especially the rich crimson and the dwarf yellow, are easily raised from seed, and if not used in beds are very effective in borders. These are but a few of the plants that are available for spring flower gardening, and where used judiciously produce the most charming effects. Where bulbs, such as Tulips, Hyacinths, &c., are used, it is a good plan to plant the bed after the bulbs are put in with dwarf-growing plants such as a bed of red Daisies with white Tulips, or white Daisies under blue or red Hyacinths. In this way, and with a liberal use of Crocuses, Snowdrops, and Scillas planted in patches or in lines here and there, bulbs can play an important part in any well-arranged garden, and materially assist in producing a beautiful display during early spring.—A. D.

Some New Delphiniums.—What great improvements have been worked amongst Delphiniums during the past few years! A bed of them finely flowered is a striking object in its rich hues of blue.

The double and single forms alike have been subject to the change, and the long huge symmetrical closely-set spikes are objects of great beauty. Among the double flowers the following, according to the "Florist," are particularly fine :—Argus, azure-blue, striped and tipped with rose; Claire Courant, bright azure-blue; Grandiflorum plenum, rich dark shining blue, tinted with bronzy-red, large and fine; Herman Stenger, outer petals bright violet-blue, centre petals rosy-pink; Keteleeri, a distinct and beautiful variety, producing freely dense spikes of lavender-blue flowers; Paul et Virginie, outer petals bright blue, centre petals bronzy-red, striped and edged with white; Roi Léopold, outer petals bright blue, inner petals rosy-violet, centre sulphur and white; and Thiers, azure-blue, centre white and rosy-pink Of the single flowers, which after all are the most striking, the following are effective :—Amabile, azure-blue, changing to rosy-lilac white and orange centre; Celestial, ultramarine-blue, with conspicuous velvety-brown centre; Formosum lilacinum, light lavender tipped with pink, ornamented white centre; La Belle Alliance, bright violet-blue, with a white and orange centre; Madame Chaté, porcelain-blue, suffused with bronzy-red, orange and white centre; Madame Henri Jacotot, bright azure-blue, suffused with delicate rosy-pink; and Pulcherrimum, rich shining blue, changing to reddish-bronze, orange and white centre.

Blue Hydrangeas.—I have struck several cuttings from the common pink Hydrangea, which have produced beautiful blue flowers. This may be effected by means of a little powdered alum being mixed up with the soil in which they are grown. Now is a good time for putting in the cuttings, which I find do best when plunged in a little bottom-heat, as they make good blooming plants for planting out in about two months' time. The Hydrangea is not only useful for planting out; it has also a striking appearance in window boxes and window vases for house decoration.—T. W.

A New Way of Striking Pinks and Carnations.—Twelve months ago, when I went to pipe my Pinks, I put each sort after dressing them into a pot with water, the pipings being packed close together; these I placed under a bush until I got my bed ready. By accident I omitted to plant one lot, and left this in the pot. I did not see them for some three weeks or more, and when I came to look at them they were all rooted. I at once took them and planted them in the stock-bed and did not lose a plant. This year I adopted the same plan with all my Pinks; only, instead of putting them in the shade I put them in the sun. They struck without a single failure, and no one can have finer plants.—"Florist."

Columbines in Utah.—The Columbines of the Rocky Mountains are very desirable plants for garden purposes, the gem of them all being Aquilegia cœrulea. This has now been introduced for some time, but some plants of this species seen in Utah seem to belong to a distinct variety; their colour is not blue, or blue and white, but pure white or yellowish-white. They were flowering in great quantity 10,000 ft. above the sea, wherever any tiny stream trickled down the mountain slopes, and the flowers at a little distance reminded one more of those of Eucharis amazonica than anything else. The plant grows in handsome tufts 2 or 3 ft. high, the flowers large and broad, and the spurs very long (2 in. at least), with a rounded knob at the top.—M.

Plants and Ozone.—Professor Mantogazza, of Pavia, has lately discovered that ozone is generated in immense quantities by all plants and flowers possessing green leaves and aromatic odours. Hyacinth, Mignonette, Heliotrope, Lemon, Mint, Lavender, Narcissus, Cherry-laurel, and the like, all throw off ozone largely on exposure to the sun's rays. So powerful is this great atmospheric purifier, that it is the belief of chemists that whole districts can be redeemed from the deadly malaria which infests them, by simply covering them with aromatic vegetation. The bearing of this upon plant culture in our cities is also important.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Garden Edgings.—Can you suggest anything besides Box for the edgings of walks? Surely there is some other plant that would stand cutting and would look better.—Edinburgh. [None with which we are acquainted.]

The Fraxinella.—I find this to succeed better when fully exposed to the sun, and in a situation well manured I have had twenty-five flower-spikes on a plant. It may be transplanted at almost any time. Its scent is agreeable; but it is as well to remember that it is a poisonous plant.—F.

Fern Leaves for Beds.—In most parts of the country there are woods which are full of Ferns that usually are of little use, save as a gratification to the sense of sight. It may be worth knowing, therefore, that the soft parts, if stripped from the stems and dried in the sun, retain their toughness and elasticity for a long time, and are said to be superior to straw or chaff, and even better substances than these for stuffing mattresses. The ticks, when filled, should be stitched firmly with a mattress-needle, using strong linen twine.—B,

TREES AND SHRUBS.

LEBANON AND ITS CEDARS.

Since I sent you some notes on the Cedar of Lebanon (see p. 56) I have found a communication by Dr. Hooker, dated 1861. According to this letter, Mr. Jessup, an American missionary, had discovered several extensive groves of Cedars in Lebanon. Of these there are five, three of great extent, east of 'Ain Zahalteth, in the southern Lebanon. One grove lately contained 10,000 trees, and had been purchased by a barbarous Sheikh from the more barbarous Turkish Government, for the purpose of trying to extract pitch from the wood. The experiment, of course, failed, and the Sheikh was ruined, but several thousand trees were destroyed in the attempt. One of the trees was 15 ft. in diameter. Two small groves were found on the eastern slope of Lebanon, overlooking the Buka'a, above El Medeûk; and two other large groves, containing many thousand trees, one above El Barûk and another near Ma'asiv, where the trees are very large: all are being destroyed for firewood. The Rev. Mr. Tristram had also discovered another grove, and another was discovered near Dûma, making in all ten distinct localities to the south of the one originally discovered. The accompanying sketch gives some idea of the appearance of these Cedars in their native habitats.

W. B. H.

Transplanting Large Trees in Summer.—Two of the largest trees, which, in all my operations in that way for the last forty-five years, have ever been attempted to be removed, were successfully transplanted at Kingswood Warren, Surrey, the seat of Sir John Hartopp, Bart. They were two Cedars of Lebanon of the following dimensions :—The first was removed in the middle of July, 1875, in an active state of growth, with an undisturbed ball of earth, weighing over 40 tons; its height was 50 ft., the diameter of its branches 37 ft., feathered to the ground, and the girth of the trunk was 8 ft. 10½ in. The second was removed the first week in August, also in an active state of growth, with a ball undisturbed, over 50 tons in weight; it was 18 ft. long, 15 ft. 6 in. wide, and 3 ft. 7½ in. deep. This tree was 47 ft. in height, 59 ft. in diameter of branches, 11 ft. 6 in. in girth of trunk, and at 4 ft. 8 in. above ground it measured 10 ft. 9 in. in circumference. This tree was raised up an inclined plane, and in the first 101 ft. from the starting point was raised 7 ft. 9½ in. Both of these trees rested on large baulks of timber, and were moved on rollers. These trees have never shown any check, and are now in vigorous health. The sub-soil, being a concrete mixture of flints and marl, with clay, was no doubt favourable for the ball holding together, but, on the other hand, was most difficult to drill under.—Wm. Barron, *Elvaston Nurseries, Borrowash.*

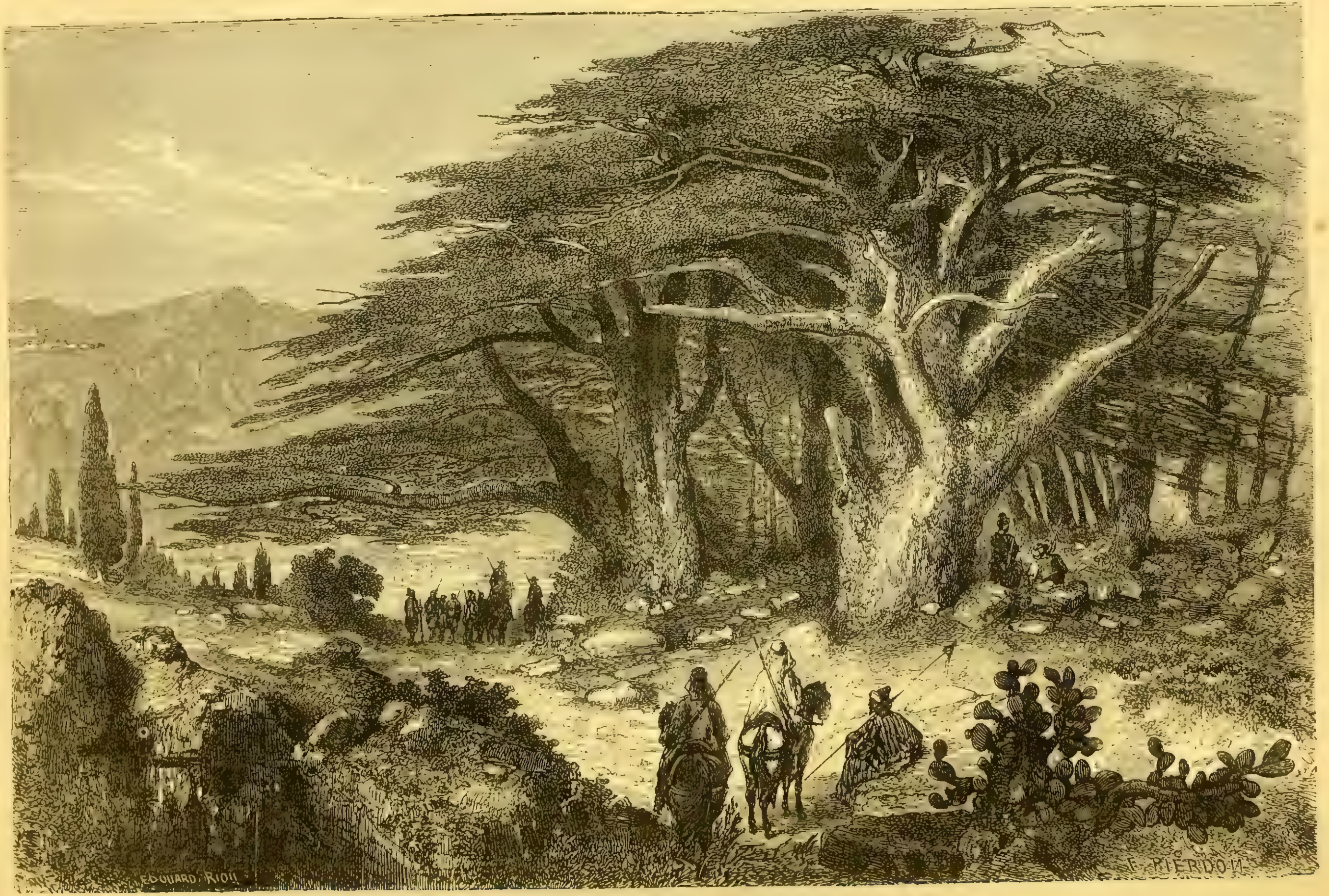
Lifting Effect of Frost on Trees.—Dr. Lapham, State botanist and geologist of Wisconsin, says that frost exerts a lifting power on full-grown trees, so as to induce an impression that the tree begins to grow again after once attaining its full growth. When the land freezes expansion ensues, drawing the tree up with it, and leaving of course a cavity whence the root was drawn. When the first thaw comes, the moisture, carrying earthy matter, enters the cavity, and thus the root is prevented from returning to its original position. Dr. Lapham suggests that one of the chief offices of the tap-root may be to guard the tree as much as possible against this frost-lifting.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Gum Tree in Derbyshire.—Let the "Derbyshire Grower" try his Gum tree in the way suggested by Colonel Leigh in The Garden—with a thick carpet of hair round its roots. That will give it a chance.—B. [Colonel Leigh's plan is a good one for many plants that fear cold at the root, but no substitute for the climate required to develop a Gum tree fairly. Even those in the south of England and Ireland, where the climate is mild, never assume their true character from the want of sufficient heat.—Ed.]

The Virginian Cedar in Winter.—The Red Cedar, when it grows in natural luxuriance, is sometimes loaded with beautiful purple berries, which massed among its dark evergreen foliage, present an exceedingly ornamental appearance. By selecting the berry-bearing trees in their wild localities, a strikingly ornamental effect might be produced.—J. J. Thomas.

Anderson's Oak (Quercus Andersoni), a new species of Oak from the Sikkim Himalaya, was the subject of a paper read by Dr. King at a late meeting of the Linnean Society. It is the "Katoos" of the Nepaulese, and one of the very finest of Indian forest trees. It is closely related to Q. spicata, but is met with at higher altitudes, and will probably prove a valuable tree for our gardens and woodlands.



CEDARS OF LEBANON AT HOME.

THE FRUIT GARDEN.

FALLACIES IN FRUIT CULTURE.

Practice based upon extreme ideas when applied to gardening matters, as in the case of most other things, is rarely sound. It often owes its origin to insufficient knowledge possessed by the individual with whom it originates on the subject with which he endeavours to deal. It might be supposed that appliances and methods of cultivation thus ingeniously foisted on the public would quickly die a natural death; but such is by no means the case, for it often happens that for a time at least they are endowed with a vitality that well-nigh defies the clearest proof of their worthlessness, for no matter how glaring their inconsistency may be, or how clearly they are shown to be useless, they rise again hydra-like. Some twenty years ago the wonderful discovery was made that growers were all wrong in cultivating hardy fruit in the open air according to the system that had been found to succeed thoroughly for the preceding generation at least. Trees large and small in the open air were to be superseded by a race of Liliputians grown in pots under glass. The cultivation of Peaches, Nectarines, Apricots, Cherries, Plums, Pears, and Apples was to be completely revolutionized by the new discovery. Old gardeners, with perceptions as clear and observation as keen as any that are likely to follow them, and who moreover had the great advantage of leisure to devote their attention to hardy fruits in a way denied to gardeners of the present day who have so much to divide their attention, shook their heads when they calculated the cost in labour and house accommodation. Some had the temerity to express their dissent or to hint that the fruit could not by any possibility be worth the cost incurred in labour, however abundant the crop proportionate to the size of the trees. But their remonstrance was summarily dismissed, and whoever did not fall in with the new idea was unceremoniously put down as hopelessly incapable. Edition after edition of the treatise that described and belauded the system was published, the result of which was that by amateurs innumerable who were fond of the pursuit, and in many larger establishments, often against the better judgment of the gardener, the system was adopted, and the little toy trees found purchasers by the thousand, the only difficulty being to keep pace with the demand. Hundreds of fine old productive Apple and Pear trees were consigned to the fire as encumbrances not longer to be tolerated. Even the flowers of these miniature trees were discovered to have a beauty about them such as the stupidity of the practitioners of the old school had never allowed them to discern in trees grown naturally in the open air. Nothing could possibly have been more satisfactory than the movement was on one side, *i.e.*, the sale of the trees; but not so on the other, for the chagrin and disappointment experienced after a time was complete, and just what was patent it would be to any man experienced in fruit culture, backed by common sense. When the little-tree mania began to subside, they might be seen in all directions thrust into out-of-the-way corners, and looking about as comfortable as drone bees do when expelled the hive by the workers. The fact was that those who had been deluded into spending money for trees, and erecting houses wherein to grow them, found out to their cost what every one possessing ordinary powers of calculation, and practically acquainted with fruit culture, were certain of when first the method was brought under notice. But the game is not yet quite played out with these little pot trees. In another quarter it was discovered that the means of giving them often a complete change from the inside of a house to the open air would be an advantage. To effect this, a movable platform, covering the greater portion of the floor of the house, was invented on which to place the pots; it was mounted on wheels running upon metals in the form of a railway, which was continued outside the house, the end of which was made to open, and in this way run out and in. Even yet a treatise on this method of fruit-growing is advertised, with an intimation that the system is in operation at Chiswick. True, the house spoken of is there, but it is not in working order. The whole of this little-pot system of fruit growing, with its root cramping and shoot pinching, has just turned out to be what all not open to adopt every new-fangled crotchet that is prepared to extract money from their pockets from the first could see it would be.

And now from one extreme we jump at a bound right to another, that is, if we are to follow the last new doctrine enunciated by Mr. Shirley Hibberd in his paper upon "Hardy Fruit Culture," read the other evening at the Society of Arts, and which has been given more or less in detail in the different gardening papers. The wholly unrestricted system that Mr. Hibberd advocates is the very Antipodes of the pot method, and is undoubtedly vastly more natural, but, like any other practice when carried out indiscriminately under all conditions of soil and situation with every plant or family of plants in cultivation, it is a mistake. There is no occupation that it is possible to be engaged in wherein it is so imperative that the practice should be varied according to the widely different conditions that surround the subjects to be operated upon as gardening, taking it collectively, and hardy fruit culture is no exception to the rule. Any indiscriminate method of cultivation that can be laid down for growing any description of fruit or fruits, under the widely different conditions of soil and situation, as well as the varied means and requirements of individuals, is as impossible to succeed as is the single nostrum with which the itinerant medical practitioner professes to cure all the bodily ills that affect humanity. His reference made to Oak and Elm trees is a most unhappy one, and completely beside the mark, as they are grown for the wood they make, which is very different from the production of fruit. The free slightly restricted forms of Apple and Pear trees Mr. Hibberd advocates are perfectly right for orchard culture in the majority of situations, but certainly not for all. In the thousands of acres occupied by market gardeners near large towns where land is dear and the soil well suited for vegetable growing, trees, restricted to a medium size, say 10 or 12 ft. in height, are found preferable; these do not obstruct the growth of culinary vegetables in the way that large trees do. But it is evidently not to orchard culture of these fruits that Mr. Hibberd directs his attention, or he would have said so; besides, in them he has no ground for complaint on the score of restriction, as there are few who cultivate Apples and Pears on a large scale in orchards, who are so blind to their own interests as to restrict the growth of their trees further than is necessary to keep them sufficiently open for the admission of sun and air, and the consequent production of full-sized handsome fruit. It is, therefore, clearly the management of these fruits in ordinary gardens to which Mr. Hibberd directs his remarks. And here I join issue with him, and maintain that in nine cases out of ten such trees as I have above alluded to are in every way preferable to such as are allowed to assume their full natural dimensions. Even in the largest gardens Apple, Pear, and other fruit trees grown to their full size are highly objectionable; they prevent the possibility of growing anything satisfactorily near or for a considerable distance round them, and they do very serious damage by shutting out sun and air from such crops as are far removed, from being overhung by their branches, and are in like manner injurious to the trees that occupy the walls. Whereas, if trees be managed so as to allow of their growing to a medium size they are better in every way; they do little harm to anything that is not absolutely planted on the space overhung by their branches; they are more manageable as regards gathering the fruit; the latter is not only larger, finer coloured, and consequently better flavoured through the additional light and air which it receives than that produced on the inner branches of large unpruned trees, but there is also another and a very important advantage attached to those trees that are confined to the size I have mentioned above, viz., the bearing branches soon acquire a thickness and size very much greater than the bearing wood of unpruned trees, and are thus enabled to resist wind in a way that prevents the fruit being blown off to anything like the extent that takes place in the case of unpruned trees. This is of much more importance in private establishments, such as those with which Mr. Hibberd is dealing, where the fruit has to be kept, than it is in the case of those who grow for market, and who generally dispose of their produce as soon as it is fit for use, and still further, in small gardens it is often advisable to keep the trees smaller than the 10 or 12 ft. high I have named. Mr. Hibberd's teaching is perfectly sound as regards giving the preference to large Peach and Nectarine trees over small ones; but, in the next breath, he cuts the ground from under his feet by advocating 6 ft. high movable wooden walls. Does he mean to say that anything but the smallest of small Peach trees can be grown on these? How is he going to confine them within the space available, especially as he denounces (and correctly) too much reduction of the leaves in summer. He will have no resource left but yearly taking up and cutting the roots, a plan which he equally condemns. I am no prophet, yet I venture to predict that the produce of these movable walls will never pay interest upon capital expended in their erection, to say nothing about depreciation and labour. They are in every way fitting companions for the Potato tiles, which unquestionably were the very worst horticultural appliances ever seriously put before the gardening public. I usually derive much pleasure from the productions of Mr. Hibberd's pen. They possess an originality about them that is refreshing; but in these Society of Arts' papers he has blundered.

The dwarfing Apple stocks that have of late been a good deal noticed, are spoken of as something new, yet they are only very old friends resuscitated. I well recollect when a boy, in the gardens at Claughton Hall, forty-five years age, in the borders on the sides of the walks in the kitchen garden there were quantities of them, or what we at that time knew as the French Paradise stock, and which, if not identically the same, was not perceptibly different from the Pommier de Paradis, or Doucin, at present talked about. But let not those who have not an intimate knowledge of the capabilities of this stock in different soils recommend it indiscriminately, as, at Claughton, although the soil was a deep strong loam, and hundreds of other places, it very soon died out; the trees were healthy for a time, and looked well when about the size of good Currant bushes and laden with fruit, in many cases that would have outweighed the trees that bore it. These dwarfing stocks will live in a soil that is naturally well suited to Apple culture; but where it is not, especially if at all too dry, they are useless, being affected similarly to the Quince stock for Pears under like conditions. The cultivation of hardy fruits is one of the most important branches in gardening, and in order to acquire a fair knowledge of the subject, it is necessary to be both fond of it and to give much more study and time to it than many would seem to think requisite, judging by the indiscriminate way in which it is frequently treated.

T. Baines.

[Notwithstanding Mr. Baines' denunciation of orchard-house trees, we feel bound to caution our readers against too summarily discarding their culture. No doubt merits were claimed for this system which it does not possess; but, nevertheless, we are bound to record the fact that there are now in this country many examples of the most profitable results from it. We would also remind Mr. Baines, who speaks as a gardener of long experience and great skill, that other growers of long experience and great skill in fruit culture, such as Mr. Peter Grieve, Mr. Tillery, Mr. Douglas, Mr. G. F. Wilson, Mr. Pearson, and many others whom we need not mention, grow trees in this manner with the most satisfactory results. In saying this we have no desire to recommend that in all cases trees in pots should replace the beautiful and fertile tree that one sees planted out in Peach-houses, &c., in so many good gardens throughout the country, and from which the finest fruit is annually gathered in abundance. No other system with which we are at present acquainted could surpass that for large gardens, but it is beyond all question that the orchard-house system, well managed, is a very excellent one, and a great gain to those who wish to obtain a variety of fruit from small structures.—Ed.]

A Dwarf Apple Tree on the Paradise stock.

DWARF APPLES.

For summer and autumn sorts, dwarf Apples are valuable in affording a home supply. They begin to bear in two or three years from planting, and at five or six years, if well cultivated, will afford a bushel or so to each tree. A portion of a garden as large as the tenth of an acre may be planted with forty or fifty trees, without crowding. All the different varieties of the Apple may be made dwarfs by grafting on the Paradise or Doucin stock—the former are smaller and bear soonest; the latter are larger and ultimately afford the heaviest crops.—"Rural Affairs."

NOTES ON ORCHARD-HOUSE CULTURE.

My experience with all sorts of fruit-trees, except Cherries in orchard-houses, has extended over a period of nearly ten years. Watering the trees—all of which are in pots—at the busiest season of the year is a serious matter, and when water has been scarce, and our labour-power taxed to the utmost, I have often wished that the trees had been planted out; but the most serious obstacle in the way of this is, that the house must then be almost entirely devoted to the trees; a few flowering plants might be introduced amongst them, but not to any advantage. As to having portable houses, if this can be managed without an annual expense for skilled labour, it would be a great boon; but as only a small per-centage of orchard-house is on that principle, we must do the best we can with the houses which we have. The largest pots which we use are 15 in. in diameter, inside measure; 17-in. pots were tried, but they were found too heavy for one man to move, and the advantage gained was not compensated by the extra labour. My orchard-house culture may be summarised in a few words. The trees are taken into the house on the first day of the year, at least the Peaches and Nectarines; Pears and Plums are still out-of-doors. The pots are pretty well saturated with water, and unless it is necessary to apply artificial heat to keep out frost, they will not require any water for three weeks or more. We have not room to get in the Pear and Plum trees, else they also would be under cover. The Peaches and Nectarines are brought in as the trees are more tender. They must be looked over about once in a week, and all requiring water should have a good supply. No more than this is required until the blossoms begin to expand, when about eleven o'clock every morning the branches must be shaken sufficiently to distribute the pollen; at this time I admit air freely and leave the ventilators open a little at night if the weather is mild. If, at this stage of growth, the weather is dull and cold, the heating apparatus should be used, if there is one. When the fruit has set it will probably be necessary to thin out more than three parts of it at first, reserving about twice as many as will be required for a crop; it is not good management to leave the fruit on longer than it is necessary to do so, for even in the very early stages of its existence the small fruit must exhaust the resources of the tree, being formed almost as soon as the leaves. When the trees are healthy and under good management the fruit may all be thinned out long before the stoning period, after which the house should be kept close and moist, shutting quite close as early in the afternoon as possible, so that the temperature may rise to 85°: the night temperature may be 65° or 70°. As the ripening period approaches the temperature must be lowered, more air admitted, and less moisture given; previous to this the trees should have been syringed twice a day, but as the fruit ripens syringing must also be discontinued. When the fruit has been gathered, such trees as require it are re-potted, but those that were potted the year previous are this season only surface-dressed. A tree turned out of a 15-in. pot is very frequently re-potted in one of the same size; when this is done the roots must be very much cut back, but the trees (although the leaves may flag a little for the first day or two) do not suffer. The house is kept a little closer at the time of potting and surface-dressing. The trees are turned out-of-doors a few weeks after they have been re-potted, and as soon as they are out the house is filled with Chrysanthemums and other seasonable flowering plants, which make a splendid display for more than two months. Besides the other fruit trees there are shelves for Strawberry plants in pots, which yield a supply of good fruit before that out-of-doors is ripe. As regards Peaches I consider the following six to be the best for orchard-house culture:—Early York, Royal George, Grosse Mignonne, Bellegarde, Barrington, and Exquisite; the two last are rather shy setters, but, with a little attention at flowering time, such as a camel-hair pencil drawn over the flowers, they will set well enough. I have named Exquisite, as it is the best of the yellow-fleshed sorts, and should be grown for variety. The best Nectarines are—and, like the Peaches, they are named in the order of their ripening:—Lord Napier, Elruge, Violette Hâtive, Stanwick Elruge, Pine-apple, and Victoria.—J. Douglas, in "Florist."

White Scale on Pine-apples.—I shall be obliged to any one who will kindly advise me as to how I can destroy white scale on Pines.—Pine, *Hardenberg Saxkjobing, Denmark.* [Try Mr. Tillery's cure for the white scale. It consists in "mixing equal quantities of the driest new soot and flowers of sulphur together, and syringing the plants with a fine syringe, then dusting them above and below with a common sulphur puff." This is the only cure confidently recommended, but we may state that we have known the most energetic means taken to destroy the scale have no effect, though the plants appeared to be clean for a short time, the scale returned with returning growth, and spread with amazing rapidity; and in the end the stock had to be burnt, the house washed and scalded, and the brickwork thoroughly washed with hot lime, put on with a brush and soaked well into the crevices. Dipping the plants in water of a temperature of 132°, and in a strong solution of soap-suds for several hours has also been recommended, and "Pine" might try the experiment on a plant or two first, but we have little or no faith in such remedies.—J. S. W.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Fruit Trees for the Northern Sides and Walls of Gardens (Dorset).—Pears—Doyenné d'Eté, Jargonelle. Ickworth Impératrice Plum, Coe's Late Red, Denyer's Victoria, Early Prolific. Cherries, Currants, and Gooseberries for late use.

Labels for Wall Trees.—Amongst the many inventions for this purpose, there are few that have stood the "test of time" better than those composed of soft sheet lead with the name of the tree stamped on them. If nailed firmly to the wall when the tree is planted, they will be found as legible after fifty years' service as on the day on which they were fixed. They enjoy perfect immunity from the action of the elements, and may be pronounced indestructible.—J. Groom, *Henham.*

Fruit Trees left to Nature.—I am somewhat amused to find Mr. Hibberd clamouring for Nature to have her own way with our fruit trees, considering that the very neglect he advocates causes half the orchards of England to produce fruit not worth sending to market. Let him go through any of our Apple-growing counties, and he will be satisfied indeed. Even as he speeds along in the train he will see how thoroughly his system has been observed; one thing, however, he will not find anywhere -an unpruned orchard that produces fruit of the best quality.—W. T.

PLATE IX.

THE CRIMSON-ANTHERED LILY.

(LILIUM SZOVITSIANUM.)

Drawn by H. HYDE.

The fine Lily, of which the annexed is a representation, is a native of the Caucasus and adjoining regions, and was introduced into British gardens at the beginning of the present century. It was figured in the "Botanical Magazine" as far back as 1811, from a plant which flowered in Messrs. Loddiges' nursery at Hackney. In the Edinburgh Botanic Garden I first observed it in flower about the year 1836. Plants of it must have been raised from seed received from the late Dr. Fischer, of St. Petersburg, a frequent contributor of Caucasian seeds to the Edinburgh Garden about fifty years ago. Two varieties of it have been long cultivated here under the names of Lilium monadelphum and L. monadelphum speciosum. The flowers of the latter were of a pale cream-colour, more or less spotted, having dark orange-brown pollen on the large anthers; while L. monadelphum, also a cream-coloured kind, had a slight yellowish tint throughout, and numerous minute spots on the petals, and the pollen of a light yellow colour. It is fortunate that this Lily is so easily produced from seed, as it forms very few bulblets, no matter how long it may remain in one situation. Some cultivated in a border have been in the position they now occupy undisturbed for fourteen or fifteen years, and yet they rarely ever produce more than one spike. Plants of it are readily produced from root scales, a system which is taken advantage of by many cultivators, and is the only method of increasing and keeping pure any really good or marked variety. Seed, however, is the readiest way of acquiring a stock of this truly charming plant. We have several beds of it in various parts of the garden, all the plants in which were originally raised from seed, and although the seed-bearing plants flowered beside many other garden species, it is a remarkable fact that no hybrid varieties are to be seen amongst them. If hybridisation takes place, it is only between the original varieties, as in some cases they are growing close to each other. The only difference observable in the seedling is in the colour of the pollen, which varies in different examples, running from the pale yellow through every intermediate shade to the darkest orange-brown. In some of the plants the petals are revolute, and vary from cream colour to a light yellow, more or less spotted. All, however, seem to be slight intermediate varieties between the original L. monadelphum and L. m. speciosum. We have several beds of this Lily, each containing some hundred bulbs, their flowers being annually used for class purposes; and, although these beds are lifted every four or five years, comparatively few of the plants ever produce more than one shoot. The plants average from 3 to 5 ft. in height, the tallest in general bearing the finest flowers. The finest flowering specimens vary from 3 to 4 ft., and it is not uncommon to count on such plants fifteen or eighteen blooms. The number of seedlings now cultivated being large and their differences minute, we call them all Lilium monadelphum, notwithstanding that the name implies a union of the stamens; some of the plants, indeed, are truly monadelphous, while in a large proportion of them the stamens are free, and some are exactly intermediate between the united and free condition. Besides the figure given in the "Botanical Magazine," under the name of Lilium monadelphum, a figure of the same plant is also to be seen in Paxton's "Magazine of Botany," in which it is named L. Loddigesianum. Of the species figured none of the flowers come up to the size of those produced here, where each bloom with its revolute petals measuring from 3 to 3½ in. across, and from 5 to 5½ in. from one point of a petal to another. This plant was first named L. monadelphum by Bieberstein in his account of the Caucasian Flora, and I am inclined to adhere to Bieberstein's name in preference to that of L. Szovitzianum.

The soil in which it is generally grown here is sandy loam, manured only during the operation of re-planting. Although a large collection of Lilies is cultivated here, none requires less attention than the one under notice, which, when seen in bloom in large numbers, is really a gorgeous sight. Every flower

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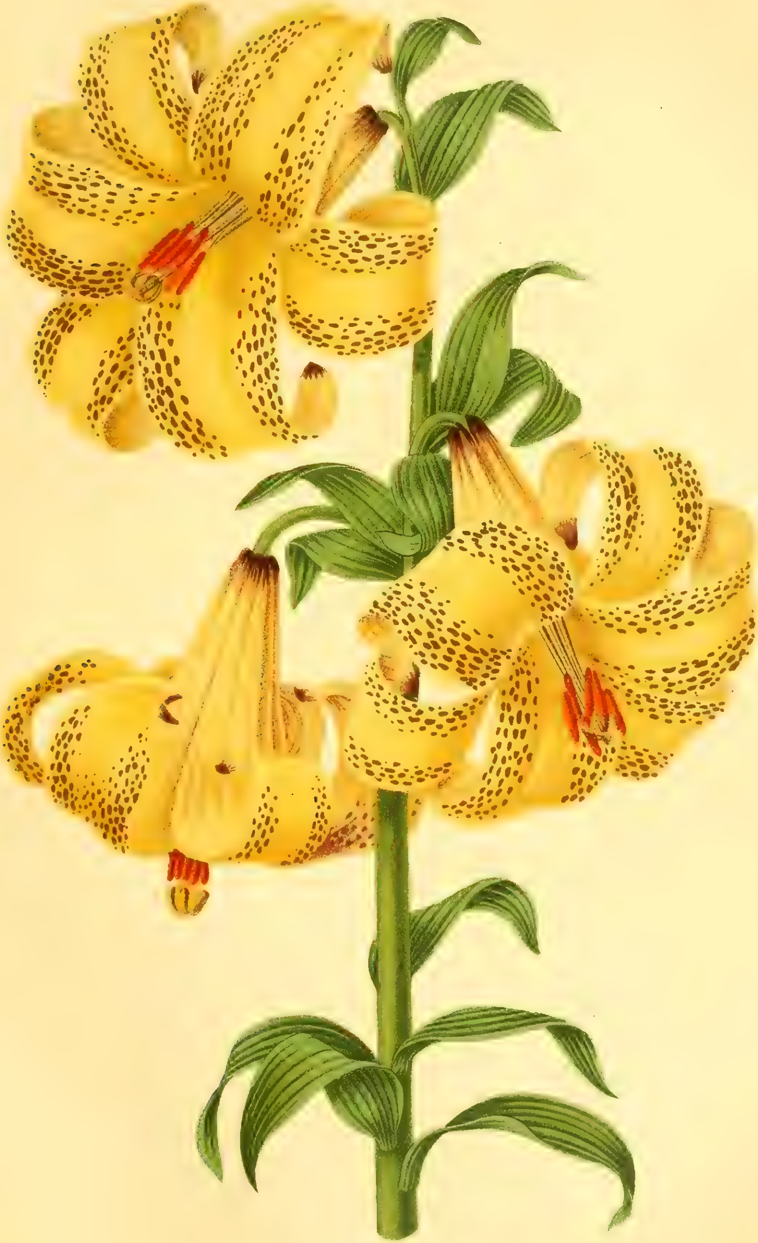


CRIMSON ANTHERED LILY (LILIUM SZOVITSIANUM)

produces a seed-vessel, erect in form and of a greenish colour, having reddish-brown markings throughout, and in this condition they have rather a peculiar appearance. When ripe they assume a yellow-papery hue and open at the top, from whence thousands of seeds may be annually saved. The seeds are usually sown in large shallow pans or flats, where they generally remain for two years; by this time the bulbs have attained some considerable size; they are then planted in beds in rows 6 in. apart, and 4 in. bulb from bulb, re-planting when necessary. By this treatment flowers are frequently produced by seedling plants four or five years from the time of sowing.

Royal Botanic Garden, Edinburgh. James McNab.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Indoor Plants.—Most kinds of hard-wooded stove plants now require potting; any of the deciduous species that have been freely cut back whilst at rest should be potted before the young shoots that have broken make much growth. This is especially the case with plants that have to be partially shaken out, as where this is done the inevitable mutilation of the roots will cause much of the young growth to stop if allowed to get too long before potting. As previously recommended, before potting the soil should be placed where it will get as warm as the internal temperature of the house where the plants are to be grown. This holds good with subjects of all descriptions, but more particularly with those grown in a hothouse. See that the soil, whether peat or loam, be in a proper condition as to moisture when used, being careful not to use it too wet, as it is impossible for the roots ever to enter it freely when compressed too closely in a wet state. The proper conditions of the soil as to moisture when used will be clearly arrived at by compressing tightly in the hand as much as can be held, and then laying the handful down on the potting-bench; if too wet, the mass will remain intact; if it contain no more than the requisite amount of moisture, it will crumble slightly; but in all cases, amateurs, in their first attempts at plant-potting, will do well to keep the soil for all kinds of plants rather too dry than too wet. The much larger quantity of water required by stove subjects through the growing season than the occupants of the greenhouse necessitates the soil being used in what may be most easily described as a rough, lumpy state—pulling it in pieces by hand, and never sifting it except for newly-struck cuttings. After potting do not give any water for some days, until the roots have had a little time to heal. It is a very common practice with beginners at plant-potting to leave the soil too light in the pots; when water is applied in this state it holds too much, and the roots, especially of hard-wooded subjects, are, in consequence, seldom produced in sufficient quantities; it also tends to the formation of soft spongy wood, with a less disposition to flower. To avoid this, as the soil is filled in the pots round the ball, it should be rammed down with a stout lath, being careful not to break the roots; do not fill the pots too full, as this gives much more trouble when watering, through there not being space sufficient to admit of the whole being moistened without filling up two or three times, which is frequently the cause of the lower portion of the soil in the pots getting into a dry hard condition, which prevents the roots making healthy progress. It will generally be found the best to pot the largest plants first, when these have to be moved into larger-sized pots, as it will liberate theirs for the smaller stock, in all cases washing the pots thoroughly, and allowing them a short time to dry before using; dirty pots can be washed much easier, and they will dry fit for use in a few minutes if the water be hot. Plants, such as Allamandas, Bougainvilleas, and climbing Clerodendrons, that are grown on trellises, should have these fixed to the pots by three or four stout sticks being thrust well down into the soil, fastening the trellises to them with thin wire that will not rot through the moist atmosphere of the stove, like bast or twine. It will be easily understood that by inserting these sticks in the new soil, mutilation of the roots will be avoided that would otherwise occur if they were not fixed till the roots had made more progress.

Bedding Plants.—It is now time to get on with striking bedding plants, as, if this work be delayed, the young plants have not time to acquire sufficient strength and size, with the requisite hardiness, before the time for planting out arrives, the result of which is that the season is far advanced before they get well-established, and in a condition to flower freely. Those who have the convenience of a stove may dispense with the usual hot-bed and frames for cutting-striking, and also with propagating glasses and cutting-pots, by using small pans or saucers, such as are used under some pot plants. This is the method known as striking in sand and water, which is a very simple process, but one that I find is often misunderstood, leading to failure or only partial success through the sand being merely kept in a damp state, instead of sand and water. The pans used for this purpose should not be very deep, for, if there be too much water over the sand, soft-leaved cuttings, such as Verbenas and Lobelias, are liable to rot. Small pans, 1½ in. in depth, are the best; put in them 1 in. of clean sand in the bottom, and add as much water as will completely cover it, filling the pans up to the brim, in which state they must be kept until the cuttings are rooted, filling them up, as the water diminishes, by soaking through the pans, and by evaporation. When there is not enough water, soft cuttings flag, and either do not root at all, or very slowly. The principle of the method is to dispense with confining the atmosphere that surrounds the cuttings by the use of propagating frames or glasses ordinarily employed, which the use of the water supplants. The advantages are that where a stove is at command, and there is not an extraordinary number of plants to be struck, the usual appliances can be dispensed with, and the cuttings can be placed on shelves so near the light that they do not get drawn up weak whilst making roots, and do not need shading except when the sun is directly upon them. Care must be taken that the leaves of the cuttings are not bruised in the least, and that they are not allowed to flag by an insufficiency of water over the sand. They should also be potted off or placed in boxes as soon as they are rooted. By this method Verbenas, Ageratums, Fuchsias, Lobelias, Calceolarias, and Heliotropes will root in ten days or a fortnight. A prejudice often exists against using pit sand for cutting-striking, especially when it is of a reddish colour, under the impression that it is impregnated with iron; yet it frequently happens that for striking cuttings of soft things such as the above, it will answer quite as well as the best white silver sand, but it will generally be found that in using this pit sand, the cuttings will root much quicker in it when first dug than after it has remained for a time exposed to the air.

Pits and Frames.—Soil for using in Cucumber and early Melon beds should be put in an open and airy shed, and frequently turned over so as to dry it sufficiently; if put on the beds when too wet it causes so much vapour as to make the young plants extremely tender and liable to injury from the least sun. If it be laid quite thin, and on a dry surface, when under cover, it will be in a fit condition for use much sooner. As the days get longer, give plenty of air to everything in frames that will bear it, especially Cauliflower and Lettuce; draw the lights completely off on mild days, without which they become weakly; when grown under hand-lights or cloches, treat similarly.

Apricots.—These should now be pruned and nailed or tied in according to the system on which they are grown. If this work be delayed too long, the buds that have swollen to a considerable size are liable to be knocked off in the operation.

Peaches that were loosened from the walls in the autumn with a view to retarding their blooming may remain a week or two longer before being pruned and nailed if their buds are yet backward. As the state they are in will depend much upon the part of the kingdom and local conditions of soil and situation, no positive time for doing this work can be laid down, but the longer the trees are kept away from close contact with the wall the later they will flower with a proportionately better chance of their escaping frost. It is good practice to prune the whole first and defer the nailing or tying as late as it can be done without injury to the bloom.

Planting.—All planting of everything of a deciduous nature should be brought to a close as soon as possible; as, after this time, removal seriously interferes with the season's growth, especially if the weather during the ensuing month be cold, accompanied by drying winds.

Stoves.

With lengthening days affording an increase of sun and light, the temperature may now be gradually raised. Anything ranging from 55° to 65° will be ample during the night, affording an increase of from 10° to 20° on the afternoons of bright sunny days. During dull cold weather the heat must be kept low, as it is useless attempting to force on growth in the absence of light. The same with night temperatures; it is useless battling with the weather, endeavouring to maintain a certain degree of heat, as much more harm is done in that way than if the thermometer were now and then allowed to run back 5° or 10° in severe weather. The ungenial state of the atmosphere caused by overheated pipes is far more detrimental to the health of plants than an occasional decrease in the temperature, provided that does not go beyond a certain limit. On sunny days the pipes should be kept as cool as possible, so as to obviate the necessity of opening the ventilators beyond what is necessary in the ordinary way of just changing the air to promote healthy growth.

Anything beyond this is mere waste of fuel and injurious to the plants, as every particle of moisture is driven out, leaving them in a flaccid exhausted state from the rapid unfavourable change the air undergoes when this occurs. The fires, therefore, in all plant-houses should be kept sufficiently low to prevent any extra heat in the pipes till towards mid-day, and then to make up for the absence of sun; but the latter and fire-heat together during the forenoon should at all times be avoided. It is impossible to maintain plants in health and keep them free from insects if care and attention be not exercised. The importance of so regulating artificial and natural heat cannot be too strongly impressed on beginners and others inexperienced in such matters. Most stove plants will now require re-potting, not so much to get them into larger pots as to renew the soil, that will, in most cases, have lost its fibre and porosity, or have become exhausted or stale through continuous watering. All young growing stock should at once be shifted on, using good rough fibry soil, which should consist principally of peat and loam mixed in the proportions of about two of the latter to one of the former. This, with a little sand, will suit the requirements of most stove plants, excepting such as Anthuriums and others of that class that want rough lumps of peat and Sphagnum. No stove should be without these most useful and attractive plants, as they are so very easily grown. Their flower-spathes are as curious as they are brilliant and beautiful, and last for a great length of time on the plant; or when cut and used for the flower vase, and associated with the Eucharis or other light flowers of that class, they are especially effective. The pots for these should be well drained, as they require large supplies of water while making their growth, and a small pot placed in an inverted position in the bottom of the one to receive the plant, which should then be filled to a third of its depth with pieces of soft, porous brick, charcoal, or potsherd, on which should be placed the rough peat and Sphagnum for the plant to grow in. Keep it well up above the rim of the pot, so that when finished off the crown of the plant may be elevated at least 2 in. Work the rough lumps of fibry peat carefully in amongst the large fleshy roots, so as not to bruise or injure their soft spongy tips; and when doing so, fill in the interstices with fresh Sphagnum and an occasional lump of charcoal the size of a Walnut. Keep the leaves well sponged and the plant heavily syringed while making its growth.

Marantas and Caladiums.—These are ornamental and useful plants for decorating the conservatory, halls, or corridors, in the summer or autumn, or for mixing with Ferns and other fine-foliaged plants. None are more beautiful or useful for the above purpose than the old M. zebrina, and as it will grow in a lower temperature than most of the others, it is doubly valuable. M. Veitchii is a splendid variety, having rich markings, and is a fit companion to the above. These should now be potted in a rich, loose, vegetable soil, consisting principally of peat and well-rotted leaf-soil, with a few small lumps of fibry loam and a very little decayed manure and sand. Pot moderately loose in well-drained pots, which should be of rather large size to give them plenty of root-room. Give them a little bottom-heat to start them, or place them in a warm part of the house where they can have frequent syringing or a moist atmosphere. Marantas are shade-loving plants, and must, therefore, not be placed where the sun shines fully on them. Roof climbers, such as Allamandas, Bougainvilleas, and others of that class, should now be pruned in, and the former regulated and tied. With regard to Bougainvilleas, it is only the variety known as glabra that admits of being pruned at this season, as the others flower on last year's wood; and, therefore, to remove any of this is to take away a portion of the bloom. In cases, however, where they have been allowed to become thick and crowded, it may be desirable to thin out some of the strongest shoots that are not showing flower freely, as that will let in light and air to the others, which is highly essential for the purpose of imparting the natural colour to the numerous leaf-bracts. The young wood of glabra will flower at almost every point if it be kept properly thinned out while growing, and if successful when planted out, it may be had in bloom from May to October, or even later. Bougainvilleas require very close watching just now, as green fly is sure to attack them, and by lodging themselves in the young embryo bracts, they are apt to escape notice. In addition to crippling the tender growth, they greatly disfigure the delicately-coloured leaves by their excreta, and this cannot be removed by syringing. To ensure perfect freedom from these, the plants should at once be slightly fumigated, repeating the operations for two or three days in succession. Syringe frequently to dislodge any that may remain, as well as to promote free growth and a full development of the plant's rich inflorescence. Start Caladium bulbs by placing the store pots in a much warmer position than that in which they have been wintered. The top of hot-water pipes is a suitable place for them; or for convenience, and to economise room they may be shaken out of the old soil and be started by placing several bulbs in a pot or pan, to be plunged in a good brisk heat. If any water be given, it must be in the most sparing manner possible, or the bulbs will rot. Unless the soil becomes exceedingly dry, it is seldom that they require watering till the bulbs begin to push, and even then what is afforded by syringing is generally sufficient, as bulbs of this description contain sufficient moisture in themselves to start them into growth. Allow them to become well advanced before any attempt is made to increase them, for if divided by cutting the bulbs through before they have made some roots and tops, they are almost sure to rot. The most useful and distinct varieties to grow are Argyrites, Belleymei, Alfred Blea, Dr. Lindley, and Prince Albert Edward. The latter is a very distinct kind, and valuable on account of its stout leaf-stems, that are almost as stiff as those of an Alocasia, standing well erect without any support; Argyrites is a perfect little gem, its size and habit rendering it most suitable for table decoration; Gloxinias may be started in much the same way, and receive similar treatment to that recommended for Caladium bulbs. Any of these now starting should be potted in rough peaty soil in the pots it is desired to flower them in; place them on shelves well up to the light, but not in a position where the sun strikes them with full force; water most sparingly till they get well into leaf and firm hold of the new soil, after which water liberally. For late autumnal blooming seed should be sown at once, the produce from which is sure to give many beautiful varieties, often equalling some of those named. Sow on the surface of finely-sifted peaty soil and cover the top of the pot or pan with glass, shading it during the day till the seeds germinate. A brisk bottom-heat will soon bring them up, when they must be placed near the light to keep them from drawing; prick out as soon as large enough to handle, and grow them quickly on in moist heat. Plants of these raised now and pushed forward in this way will be most useful for late blooming, and afford a good stock of strong bulbs for another year. Achimenes, on account of their great variety and general suitableness for decorative purposes, can scarcely be had in too great a quantity. These do best started in fine peat or sifted leaf-soil, from which they can be easily separated, after having formed shoots an inch long, which is a good length for transferring them to their flowering pots, or starting them in baskets, for which latter purpose they are well adapted on account of their pendulous habit. A loose, rough, peaty soil is the most suited to their requirements, as it remains open and porous, thereby affording a free passage for water, of which they require large quantities when carrying their bloom. Place those already potted into a nice moist heat where they can be frequently syringed; a vinery, or other forcing-house at work, will be just the place for them, provided they are not too far from the glass.

Plants for the Sub-Tropical Garden.

The sowing of such subjects as Wigandia, Acacia lophantha, Uhdea, Solanum, Canna, Centaurea, and others that take a long time to grow to get them of sufficient size, should be commenced at once, postponing to a later period such as Castor Oil, Chilian Beet, Zea, Amarantus, &c. The latter, if sown early, are sure to get stunted and checked in their growth, and are always much inferior to those plants raised in April, when the weather favours a quick healthy growth. Start any old roots of Cannas, but, before doing so, shake out the old soil and divide the roots, to afford room for new growth. Any frame with a slight bottom-heat will answer the purpose for starting them in. Scatter some rotten leaf-soil amongst them, from which they will lift with good balls of earth without suffering any check whatever. Treated in this way, the time and labour of potting is saved, and they can be kept in a much smaller compass. Aralia papyrifera is, perhaps, the most effective of all the fine-foliaged plants now used for an out-door display during the summer months. Where these have been wintered in cellars or sheds, or other out-of-the-way places, so as to have caused the loss of their leaves, they should now be started under glass if an early display be desired; pieces of the large fleshy roots of these cut up in lengths of 2 to 3 in., and placed in bottom-heat, will soon break, and form nice plants for the outer margin of beds containing others of larger size.

Ficus elastica is a most serviceable plant for the sub-tropical garden, from which if lifted in the autumn it becomes valuable for the greenhouse or for halls, corridors, or rooms, in positions where it would be unsafe to put plants of a less hardy and enduring nature. Cuttings of these strike readily at this season, or where numbers are desired, they may be increased at a more rapid rate by inserting buds with a leaf attached to each. The leaves must be kept erect by supporting them with a small stick or two as required. Young plants of from 1 to 2 ft. high with single stems, having leaves from top to bottom, are the most useful and ornamental. Buds or cuttings inserted now will develop into healthy subjects by next winter.

Hedychium Gardnerianum is a most attractive plant, and quite as hardy as a Canna, with which it associates well on account of being of similar habit. These should now be divided and started into growth preparatory to being turned out in May, which should be done in rich soil to induce them to flower freely. If lifted in the autumn just before they show bloom, they will be found valuable for the greenhouse, where they will last a long time in beauty, and attract much notice from the singularity of their flower-heads. Those not required for the above purpose may be left in the ground, where they will stand the winter if protected with a little mulching of some kind, such as half-rotten leaves.

Greenhouse Ferns.

These should now be closely examined to see if any turtle scale, thrips, or other insects, are lurking on the fronds. If so, the present is a good time to clean them thoroughly, as some of the old fronds may now be removed, and so save the time and trouble of hand-washing. The practice of entirely denuding them of their fronds at this time of year is bad, and has a very weakening effect on the plants. In cutting them away, judgment and care should be exercised, first removing such as are ripe and becoming shabby and discoloured, and gradually following on with the others as the young fronds unfold. By a strict adherence to this course, the plants receive no check, as there is then always a sufficiency of leaf to keep up healthy root-action. Any tree Ferns that are too tall for the positions assigned them may have their stems shortened to the desired length, and be re-planted in the same position. This is an operation that can be carried out with the greatest safety at almost any time during the winter, and before they begin to make young fronds, and is also a great advantage to such rapid-growing plants as tree Ferns, which soon get too large and high for any ordinary-sized house; but with the above treatment they can be kept within bounds, and in the same positions as long as it is thought desirable. After shortening the stems, a good portion of the old fronds should be removed, only leaving two or three to assist in the formation of fresh roots. If the stems be bare of these, they should be bound up with Moss to keep them from the light, and in a uniform state of moisture. Re-plant in good rough soil, containing a third of broken brick of an open porous nature, that water, of which tree Ferns require large quantities, may pass quickly and freely through. Keep them syringed freely overhead and about the trunk, but the soil should only be slightly moist till they begin to root freely into it. These, as well as the stove varieties, will now require potting, for which purpose the same kind of soil as recommended for the stove kinds will answer, only that most of these, especially such as have thick fleshy fronds, will be benefited by a larger admixture of loam. Where these are planted out and grown in the natural style, the soil that should have been kept somewhat dry during the winter should now have a thorough watering, so as to ensure the whole of it being moistened; but before doing so, see that the soil has not shrunk away from the sides of the rock, or become loose and hollow from settling; if so, thoroughly fill up the interstices with fresh soil before applying the water. On bright sunny days give a gentle syringing, but merely exclude frost by night, so as not to hurry them on, unless a different course is rendered necessary by the house containing kinds that will not stand so low a temperature. Sponge and clean the leaves of Palms and other broad-foliaged plants, that they may present a bright healthy appearance, and not contrast unfavourably with the Ferns. These are rather subject to white scale, especially if in a rather dry atmosphere, or at all pinched or starved at the roots, either from being pot-bound or kept in too dry a state. Such abominable pests must be got off by hard rubbing, but it must be done with care, not scratching or defacing the plants. A half worn-out toothbrush is, perhaps, the best for the purpose, and from four to six ounces of Fowler's Insecticide to a gallon of water will not be too strong an application, as the plants will suffer no injury from it at that strength, provided it does not lie and soak into the hearts of the plants. Where fresh soil cannot be added to the roots of these in sufficient quantity to prevent them from becoming in the above unsatisfactory condition, they must be assisted by frequent applications of weak manure-water made from soot and guano.—J. Sheppard, *Woolverstone Park.*

Orchids.

Peat, Sphagnum, carefully washed sandstone, grit, and crocks, may now be got ready for potting purposes. All pots, pans, &c., may be washed in wet or dull weather, and labels prepared for future use. At present but little can be done in the way of potting that cannot be better effected next month. Do not water too copiously at the roots in dull weather, but maintain a humid atmosphere, especially when the weather is dry. The extreme dryness of the air in plant houses, and especially in those which are artificially heated, is an evil which cannot be too carefully guarded against, as it is one which has a baneful influence on all plants, robbing the tissues of their proper juices, and thus weakening them for their future growth and bloom. Some plants now making growth, such as Odontoglots, Disas, Oncidium macranthum, and some Masdevallias, may be more copiously watered than pseudo-bulbous species which are now at rest, but no Orchids should be allowed to become absolutely dry at the roots, if we except the deciduous Calanthes and Dendrobes. All shrivelling of either bulbs or foliage must be carefully avoided by keeping the compost uniformly moist. One of the best tests of the humidity of the compost and air of the Orchid-house is living Sphagnum Moss, which should be used as a surfacing to all pots and pans in which cool Orchids are growing; it answers the purpose of a hygrometer, and preserves an equable temperature and genial moisture around the roots. Disas, Cypripediums, and Masdevallias may receive a gentle dewing during bright weather in the forenoon with advantage, and air should be given at every available opportunity during mild weather. Orchids in bloom should be carefully attended to, and moisture should be regularly supplied at the roots so as to counteract that tendency which the bulbs and foliage have to shrivel when placed in the dry atmosphere of the conservatory or show compartment. In some cases where the plants are rather weakly, they produce too many flowers, and in that case it is an excellent plan to cut some of the spikes or flowers as they open so as to relieve the plants, and enable them to start better into growth than if their energies had nearly all been expended on flowers alone. Phalænopsids and some Masdevallias, more especially the chaste little M. tovarensis, are very apt to bear an enormous quantity of flowers, and if these be all allowed to remain, the health, if not the very existence, of the plants is endangered. Some of the warm-growing Dendrobes will now be showing signs of young growth, and it is an excellent plan to hang such plants near the light in one of the early vineries. Some of the finest plants of D. Devonianum, D. Wardianum, and D. Pierardii I ever saw were grown in this manner, and a sunny vinery affords an excellent climate in which to ripen off pseudo-bulbous Dendrobes, Lælias, and Lycastes during the autumn months.—B.

Hardy Herbaceous Flowers and Alpine Plants.

At this season of the year every fine day should be turned to account by an inspection of Alpine plants whether on rockery or in frames. On the rockery many of the choice and smaller-growing sorts will have become disinterred by the dying away of their summer's growth, and in not a few instances will choice gems have succumbed altogether. Many of them will, however, have fought their battle for life valiantly, though, in most cases, against great odds, under the adjacent shadow. At the present time the smaller plants of the rockery should be moved to a more advantageous position for their future development, or transplanted to their proper home—the "wild garden," where they will have every opportunity of putting their full energies to the test. This applies especially to plants grown on rockeries which have been made a couple of years or more, and in which the amateur from want of a practical knowledge of the varying developmental powers of such plants, is sure to find that some do not prove a success in that position, while others again assume a more luxuriant growth than was originally calculated on by the horticulturist, to the detriment of the less favoured plants; for instance, it is not the amateur alone that is liable to make mistakes in the arrangement of his rock plants; the professional cultivator will occasionally fail. This arises from the variation in the vigour of growth which many plants assume under different conditions and in different localities; a plant may be only a few inches high, and yet when established will in a single summer cover a square yard of rockery, to the disparagement and injury of all its surroundings. Such subjects as these should be relegated to a fitting place by themselves; take, for example, the Œnothera taraxacifolia, macrocarpa, and eximia, the latter more popularly known as marginata—these are all charming rock plants, but require an abundance of elbow-room; in fact, the last-mentioned species appears to be a perfect vagrant, ignoring after the second year its paternal home altogether. Others, such as the variegated Ground Ivy, after retaining its true golden character for a twelvemonth, will revert to its original green, and defy every attempt at limitation—that is a fitting plant for banishment to the wild garden, removing the roots and soil thoroughly, for every bit of stem will grow. A nice prepared compost should be used as the basis on which that portion of the rockery is to be rebuilt, and in which more appropriate occupants may at once be planted, using a good firm hand in the process. A similar soil, composed of loam, leaf-mould, and peat, with a free mixture of sharp sand, may be used as a top-dressing for the rockery generally. Many of the smaller-rooting plants will be found lifted up by the frost, and these should be pressed firmly down again in the process of dressing, always having a few nodules of gritty limestone or sandstone to assist this operation. All the Androsaces, most of the small crustaceous Saxifrages, the Drabas, and smaller Primulas, and many others, are much benefited by being firmly wedged between lumps of stone. Where Alpines are cultivated in frames under glass, though too early yet to give them a general overhaul in the way of potting, for which process the middle of March will be sufficiently early, some of the early bloomers will appreciate a top-dressing of good rich soil, such as the Primulas, the Soldanellas, the various species of Corydalis, and even the Scillas and all early-flowering bulbs, provided, of course, they have not been potted in the autumn, which is the proper time; not that this is necessary every year, as my experience leads me to consider every third year quite sufficient. Bulbs, as a rule, do not like too frequent disturbance. The best enriching compost for this purpose is finely-powdered charcoal, previously placed in a barrel or large flower-pot, saturated with strong liquid manure, the fertilising elements of which it will retain long after it has become perfectly dry. On a bright sunny day, a thorough examination of all the pots in a frame will be of great advantage, thereby enabling the grower to detect and remove any portion indicative of damp before this mischief has become serious. This is of special importance after the frames have been closed and covered up for several days during frosty weather; it also presents a good opportunity for destroying those pests, the slugs, which are generally found under the projecting rim of the pot, or nestling beneath the tufty growth of any spreading plant; these do an incalculable amount of mischief in the dormant state of the plant, as they will eat out the buds, which means the complete destruction of both leaves and flowers. Where frame accommodation is abundant, it would be wisest to dress over the ashes of an empty one with fresh-slaked quicklime and soot, spreading a thin layer of fine ashes over the top to prevent the pots adhering to it and thus blocking up the drainage—removing the plants thereto.

Herbaceous Borders will require, equally with the rockery, an overhauling, and here we would recommend as an excellent plan that a memorandum should be made during summer of any of the occupants that require to be removed. Some that may have answered their position admirably for a couple of years, will by the third have acquired a development beyond all bounds, as the Ferulas and many of the charmingly-foliaged Umbelliferous plants, which are now pushing their spring leaves vigorously, and ought to be removed without delay. But, in doing so, remember that it is no light task, as their thick roots will be found to have penetrated even the rankest clay to a depth of from 2 to 3 ft., and are as brittle as glass; if much damage occur in the removal, a young seedling plant will make more rapid progress than the old stump, and in planting these, and all like strong-growing plants, forethought should be exercised, to avoid the necessity of any subsequent removal. During frosty weather a nice dressing of short well-decayed manure should be put on the border, distributed by means of a fork so as not to cover up the crowns of the plants. Frosty weather suits this operation for two reasons, as it enables the borders to be freely and cleanly walked upon, and, what is still more important, it subjects the manure, which contains a large amount of insect life, to its beneficial action, whereby myriads of insects are destroyed. About digging and stirring the ground all I shall at present say is—don't do so yet; content yourself with the manure-dressing till my next.—JAS. C. NIVEN, *Botanic Gardens, Hull.*

Kitchen Garden.

The sharp frost, snow, and rain of the last fortnight will, in some instances, have hindered the sowing of Parsnips and Onions; advantage must, therefore, be taken of the first fine day to get them in, though, if the ground be at all "pasty," it will be better to defer sowing for some time longer, rather than risk the loss of both seed and labour, through an unsuitable seed-bed. In order to succeed those already in frames, a small quantity of each of the following should be sown at the foot of a south wall as soon as practicable, viz.:—Lettuce, Brussels Sprouts, Savoys, Coleworts, Early London, and Autumn Giant Cauliflower; by sowing a pinch of the latter at intervals of a fortnight up to the beginning of May, a constant succession of fine heads may be secured till Christmas. This is the most valuable vegetable of recent introduction, and makes a regular succession of Cauliflower and Broccoli a matter of certainty. Sow Leeks, Parsley, and a succession of Peas as soon as circumstances permit; on heavy soils, Parsley should have the driest position, or much disappointment may ensue by its dying off in the autumn and winter; Lettuce plants that have been wintered in frames, or those that have withstood the weather in the open seed-beds, may now be planted out in any narrow border or small space between Gooseberry or other fruit bushes. Cabbages may at any time be transplanted from the autumn-sown stocks, and if they can be obtained in sufficient quantity plant near enough together, that alternate plants may be pulled out and used as Coleworts, when sufficiently large. A row of Cauliflowers may be risked out to succeed those under hand-lights. Dig a trench the same as for Celery, and deep enough to allow of a good layer of stable-litter in the bottom to afford a slight warmth, cover with 12 in. of soil, lifting them with good balls of earth round the roots; if the weather be severe, protect them by laying over the trench Spruce, Laurel, and Birch branches. In this manner Cauliflower may be had considerably earlier than from the open borders, and in many places this vegetable is so highly prized, that the extra labour should not be considered. It will now be safe to remove a part of the mulching from the stools of Globe Artichokes that are to be lifted, divided, and replanted, replacing the mulching as soon as the operation is finished: great depth of soil and abundance of headroom is necessary for the successful culture of this vegetable. Asparagus-beds should now be "pointed" over, in doing which care must be taken not to fork so deeply as to injure the crowns that will now be starting into growth; apply a dressing of salt over the entire surface of the beds, and the rain will wash its manurial properties down to the roots. Ground should now be in preparation for new plantations of Asparagus, which cannot well be too rich or too deep, and, being a marine plant, brine, salt, and seaweed are the most suitable manures for it, though it by no means refuses to thrive when other fertilisers are given. Earth up Peas soon, as they are well through the ground. Our own practice, at this stage, if the weather be frosty or very cold, is to draw the soil entirely over them. Those in earlier stages of growth should be staked, and on the windward side protected by supplementing the usual Pea stakes with evergreen branches. Cabbages and Broad Beans will also be the better for keeping the soil well up to the stems, besides the benefit accruing to the crops by the stirring of the land. Parsnips will soon begin to grow, and therefore ought to be taken up and housed in a cool shed, where they will keep good for weeks if layered in sand; moreover, the ground they have occupied can then be got ready by trenching or digging, and will be in good order for Scarlet Runners, French Beans, or Cauliflowers. Celery also, that manifests any tendency to run to seed, may be checked by lifting it with good balls of earth, and heeling it in in a cool aspect; the ground is then at liberty to be prepared for successive sowings of Peas, &c. In dry weather, if time can be spared for the purpose, keep the hoe at work amongst growing crops of Spinach, late Broccoli, and Onions; and, when wet, point rods for runner Beans and Pea-sticks, sorting them in sizes to suit the heights of each variety. In the forcing department see that nothing is injured by the too common neglect of airing when the sun is at all powerful; draw the lights quite off Potatoes, Cauliflower, Radishes, and Asparagus, that the soil may get the full benefit of the sun, closing sufficiently early to husband the warmth imparted. Seedlings of various kinds, that have been previously recommended to be sown in heat, should be pricked off betimes, as even the commonest vegetable will not bear a check without resenting it in some form or other. Keep up a constant supply of herbs and small saladings by sowing or planting such as are in demand at frequent intervals.—W. WILDSMITH.

The Neil Prize.—At a meeting of the managers of the Royal Caledonian Horticultural Society, held on the 11th inst., the Neil Prize of £54 was unanimously awarded to Mr. Robert Foulis, gardener to G. H. Henderson, Esq., Fordell, Fifeshire. Many of our readers may know nothing about the Neil Prize, and we may, therefore, state that the late Mr. Patrick Neil, of Canonmills Cottage, left £500, the interest of which was to be allowed to accumulate, and every three years to be given to some distinguished botanist or gardener. We have no doubt that the men to whom these prizes are given are worthy of them, but we should like to hear of them being given occasionally, at all events, to men whose work has benefited their profession or the country generally.

Collomia Seed and the Microscope.—I have received from a friend (says a correspondent of "Science Gossip") a few seeds of Collomia, concerning which he gave me the following directions how to obtain a most curious sight:—"Having obtained your seeds, take a sharp pocket-knife, and cut off as small a quantity as possible of the outer skin, then place it upon your fluid slide, and cover it with a small square glass slip; at first use your 1-inch object-glass, and it looks like a small piece of mud; but directly you put the smallest quantity of water in at the top of the slip, so as to touch the seed, myriads of spiracles will start away from it, and continue so to do for nearly ten minutes. I have tried this experiment a great many times, and always with success."

THE INDOOR GARDEN.

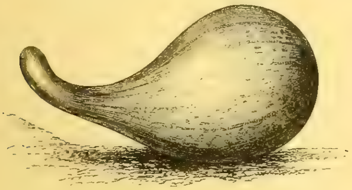
INARCHING FUCHSIAS.

The best subjects for inarching are strong-growing kinds planted out as pillar plants in conservatories or as roof-climbers in plant-houses or in corridors. When the shoots from plants that have been cut back close in winter have attained about 1 ft. in length, select the required number of young autumn-struck plants that have been grown on in heat—those in small pots with single stems are best—then fasten the pot in a convenient position for inarching the young plant on to the strongest shoots of the stock in exactly the same manner as is done in the case of Vines, viz., by paring off a portion of both stock and scion, fitting them exactly at the edges, and binding them tightly together with soft matting until a union is effected. They should then be gradually loosened and severed from the stock, a partial shading being beneficial to prevent flagging if the weather be very hot. The leading shoots of the stock should all be stopped in order to confine the growth to the grafts, which will make rapid progress, and by the end of the summer will bear quantities of bloom. The stock should consist of a robust-growing kind, the young shoots of which are much better adapted for operating on than those of slender growth. Of course sorts of opposite habit and colour should be chosen for contrast and the many beautiful variegated-leaved varieties may be used in this way with advantage. Although I have only referred to Fuchsias permanently planted out under glass, inarching is equally satisfactory in the case of plants in pots. Standards with umbrella-shaped heads are very effective fringed with sorts different both in leaf and flower from the stock. When small plants are not available, the end of the scion may be inserted in small bottles of water tied on the stock, which will keep the graft fresh until a union has taken place. James Groom.

Henham.

THE CALABASH.

I have in my possession a fruit which I have always understood to be that of the Calabash. It was brought by a relative of mine some twenty or more years ago from the West Indies, and, although it has somewhat the appearance of a Gourd, its shape is much more beautiful. As described (see p. 124) it is very hard, and would make a capital water-bottle; in fact, one would think that Nature intended it for that purpose. I have more than once tried to grow its seed, which I have extracted from the neck of the fruit, but have been unsuccessful, although it looks perfectly good. The fruit, of which the accompanying is a representation, is light mahogany in colour, and bears quite a high polish. Its size is about 9 in. long and 4½ in. in diameter. Henry Robinson.



Oxford.

THE AMHERSTIA NOBILIS IN INDIA.

Although Burmah is the only country—so far as we know—where the Amherstia nobilis has been found growing—not in a state of wildness, but of abandoned cultivation—the rarity of the tree, even there, is almost proverbial amongst the residents; and it is very little known to the natives of the land, who, however, call it Athauka,[*] and regard it as the female of Jonesia, with which it is sometimes associated in the gardens of their kioungs. The late Rev. Dr. Mason, who probably was the best authority on the subject, assured me that the home of the Amherstia was still a mystery, and that the tree had never been observed very far from Kogoon, in Martaban, where it was first discovered by Mr. Crawfurd in 1826, and subsequently seen by Wallich, who named and described it in his "Plantæ Asiaticæ Rariores." Dr. Mason informed me also that the Rev. Mr. Parish had passed a specimen while descending the Yunselon River rapidly in a boat, and, in consequence, threw out the suggestion that it might be indigenous to that locality; "but," said Dr. Mason, "if that were the case, the Kareens would be familiar with it, whereas neither they nor the Shans, to whom the tree was shown in our gardens, recognise it." He added, "I have been myself up to Karcenee without meeting with it, and even in cultivation it is not often seen." Although, perhaps, for wealth and blaze of gorgeous colour, this superb tree cannot be compared with Poinciana regia, Salmalia malabarica, the scarlet Rhododendron, or many of the species of Erythrina, yet in rich and graceful beauty it is absolutely without a rival, whether we regard the elegance of its noble pinnate foliage, or the airy loveliness of its long, pendulous racemes of brilliant flowers; and the enthusiastic delight of Wallich, when he first beheld it, can be very easily imagined. It appears to thrive well enough in Burmah, but still it is doubtful if even the climate of that country suits it perfectly, for it seems to be most difficult to propagate; and I was informed by the talented and experienced observer before quoted that it never fruited well, and that the large legumes which it produced were often barren, or nearly so—a single mature seed being frequently the sole occupant of one pod. I could not discover, with any degree of certainty, whether the seeds germinated readily or not in Burmah; but Dr. Mason told me that both General Blake and the Rev. Mr. Parish had sent them repeatedly to India, and in no case was the attempt to grow them there successful. With the exception of the trees in the Botanic Gardens at Calcutta, which were greatly damaged by the terrible cyclone of 1864, and one small plant in the Lal Baug at Bangalore, I never saw the Amherstia in India; and, even in Burmah, very few examples came under my observation. Three years ago I knew of four only in Rangoon, and five in Moulmein, though I have no doubt there were a good many more, especially at the latter place. The scarcity of specimens, however, is remarkable in a country where beautiful flowering plants are greatly prized and cultivated. The largest known tree is the one at Kogoon, the trunk of which measured 8 ft. 4½ in. in circumference[*] at 4 ft. 2½ in. from the ground on the 8th August, 1872. It then displayed a single spray of blossom, and seemed vigorous and healthy. I could not find the smaller one alluded to by Wallich, nor any trees of Jonesia or Mesua, which he also mentions; but a thick, tangled, wet jungle prevented me from exploring the vicinity very carefully, and they may have escaped my notice. Palmyras, Tamarinds, several species of Ficus, and the Meyam of the Burmese (Mangifera oppositifolia) grew in abundance close by, and formed a little tope or grove, ragged and uncared for, and fast lapsing into a wilderness. But the most beautiful Amherstia I have seen anywhere was in one of the compounds of the cantonment at Rangoon; and, during the cold weather, when this tree was in full bloom, nothing could exceed its rare and wondrous loveliness. It was of considerable height, and had six stems, which grew from one common root, so that, on close inspection, it looked a little like a cluster of enormous bushes. In the beginning of 1873 the circumference of this group of trunks, which were growing close to one another, was, at a short distance from the ground, 2 ft. 5½ in.

G. E. B.

CHALK AS FUEL.

So much has been already said and written upon this subject, that it seems almost useless to prolong the discussion; still there are one or two apparently minor points of the subject to which allusion has been made, although in a cursory manner, and which do not appear to have made that impression upon those generally interested in the matter which, in a practical and economical point of view, I think, they should have done. If I were asked the question, Is chalk or limestone a source of heat? I should answer, Yes; provided I could, for the moment, banish from memory those scientific and apparently correct theories which have been from time to time advanced by eminent authorities, and which point to a different conclusion.

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[*] *Vide* Dr. Mason's "Burmah."

[*] In 1827, at the height of a yard, according to Wallich, its girth was 6 ft.

Speaking from practical experience only, I should, I suppose commit an error. I will, therefore, leave the point to be discussed and finally decided by those who are better qualified than myself, and refer to those seemingly minor points which should, I think, more immediately concern all connected with horticulture. Granted that chalk or limestone is not a source of heat, but simply a modifier, an absorber, a radiator of heat; are not these qualities which, for the gardener's purpose, may become invaluable? If chalk, in combination with coal, tends to modify, by absorbing for a specific time and quantity, a portion of that heat which would otherwise escape or be expended too fiercely and quickly; and if a great proportion of that heat, so absorbed by the chalk, be again radiated moderately and gradually—are not these, I would ask, the very conditions—the very qualities we require for horticultural purposes? Everyone knows how infinitely superior a moderate heat radiated from a large surface is, compared with an extreme heat from a limited surface. If this be the best principle in respect to pipes, I imagine it may be in respect to the boiler and fuel likewise. It may be argued that a portion of the heat absorbed by the chalk is retained, and cannot be liberated until it undergoes the process of slacking, and that the boiler is consequently a loser of heat to that extent; but everyone who has fairly tried this method of obtaining heat is not only willing to admit this fact, but equally willing to sacrifice this small quantity of heat, especially when the value of the lime and economy in labour are taken into account as a set-off against it. Again, it may be said by some, that this only shows the ineffective state of our present horticultural heating apparatus and the necessity for one that will thoroughly utilise every particle of heat extracted from the coal, and with the power to conserve and give it off gradually for the longest period. With all due deference to those who have had greater experience in heating than myself, I would say to this objection, mix a given quantity of culm or anthracite coal with a proper proportion of chalk, place it in a suitable furnace, and it will produce what I will call, for convenience, a gardener's or moderate heat, for a much longer period, and with infinitely less trouble than the same amount of coal, without the chalk, will produce in the best arranged furnace (whether slow-combustion or otherwise) with which it has yet been my fortune to become acquainted. I would here state that I am not now referring to what is known as "Cowan's Kiln System of Heating," of which I have seen but little—and that little has been very satisfactory, but simply stating my experience of chalk and coal combined, as an excellent fuel for horticultural purposes, after ten years' experiment and trial in various ways. To those who possess a sufficiency of pipe surface in their houses, as well as a sufficient furnace-space and boiler in their stoke-holes, I would say try this kind of fuel and be convinced; but, to those who are driving an over-burdened boiler, and who require a strong heat, regardless of the expense of fuel and staking, I would say do not, for you will be disappointed. My method is simply as follows: I have two large upright tubular boilers attached to the same apparatus, set in the usual way. The chalk having been broken into pieces about 2 in. cube, and the culm broken quite small, one of the boilers is filled quite full, mixing the fuel in equal proportions throughout. It is then lighted at the bottom, and a sufficient draught allowed to enable it to light fairly, when the dampers and fire-doors are nearly closed, just allowing sufficient air to enable it to burn steadily. In mild weather, no further attention whatever is required for two days, as I find the less it is disturbed the better. On the third day, the second boiler is started in a similar manner, and the heat in the first is allowed to cool gradually, by shutting out all draught. Should the weather, however, prove cold, a few lumps of wood are thrown on to keep up the required temperature till the second boiler has ignited properly. The lime, in consequence of its not having been burned in a properly arranged kiln, is not suitable for making mortar, but is excellent for garden or farm purposes. The advantages which I gain from the use of this fuel are—(1) a steady, moderate, long-enduring heat; (2) one-third less cost in fuel, and one-half less labour in stoking; (3) no smoke, no clinkers, few ashes, and plenty of lime without purchase. The disadvantages are that in sudden changes of, and in very severe, weather, a barrow-load of wood per day is required to increase the temperature. Thomas Challis.

The Gardens, Wilton House.

Single White Camellias.—These, although very beautiful, are rarely grown in nurseries. Messrs. Loddiges cultivated a white one, but, being of bad habit, it was of no value. The late Mr. Gaines, of Battersea, showed me the only one of this sort he ever raised; that was more than twenty years ago, and I regret not having secured it. I obtained one in Covent Garden some years ago; it was of excellent habit, but the flowers did not expand sufficiently, and dropped off early. A really good single white, with good anthers, would be invaluable; but where is it to be found?—C. E. J.

Anœctochilus Dawsoni.—This pretty little Orchid is not sufficiently appreciated, not only for its beautiful foliage all the year round, but for the grand display of exquisite white flowers which it makes. It has bloomed with me, says Mr. Newman in the "Gardeners' Chronicle," from November until now, varying from twenty to thirty-three flowers on a spike, and when cut it will last a fortnight in a fresh state—a matter of considerable importance. A bed 4 ft. wide and 18 ft. long was made and planted last March with something over 1000 plants of it, and the sight of them is one not often seen. The foundation of the bed is made of ornamental blocks of Bath stone, which the roots cling to like a burr. Care is taken to fill up the crevices solid, with a mixture of good loam, peat, crocks broken small, with sufficient sand to keep the soil open and sweet. I am sure that with an equal number of Goodyera discolor a succession of white flowers might be had at least for six months without much trouble. We intend to get all the best sorts of Anœctochilus and plant them out: we have A. Lowii doing well, though most, if not all cultivators grow it under a bell-glass, also A. Petola, Ordianus, argenteus, and intermedius; and when I am in possession of A. Veitchii, xanthophyllus, and others, the bed will be extended the whole length of the house, which is a lean-to—a low house about 32 ft. long, in which we grow Phalænopsids.

Raising Chrysanthemums from Seed.—Mr. Geo. Purnell a raiser of new Chrysanthemums, writing on this subject to the "Gardeners' Magazine," says, Good seed can be obtained from many of the seedsmen. Chrysanthemum seed saved from the finest flowers may be bought, and a whole year gained thereby. Those who have the space for raising a few seedlings should purchase the seed at once, and sow with as little delay as possible. The seed-pans should be well drained and filled with a rich light compost, and after the seed has been sown, place in a warm greenhouse or pit. The young plants will soon make their appearance above the soil, and provided they are watered carefully and potted off singly when strong enough, they will make sturdy plants for turning out in May. They can be put into 3-inch pots, and to promote a vigorous growth use a light and rich compost. The majority of the seedlings will bloom the first year, and in all probability some of them will be distinct and of good quality. If the number of raised seedlings be large, a few good novelties may be reasonably expected. Those who take an interest in the raising of seedling flowers, and have the time and convenience, may commence the raising of seedling Chrysanthemums with the assurance of being amply repaid for their trouble. A new variety, considered to be very beautiful, that I shall send out in the course of the season, was raised from seed supplied by Mr. W. Bull. I merely mention this to show that purchased seed is worth sowing.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Single White Camellias.—Allow me to inform "B." (see p. 172) that I procured from the Stansted Nursery, Forest Hill, last year, a one-year old single white Camellia plant, which has borne one flower this month similar to that described by him. Single white Camellias are rare.—R. E. B.

Plants Used in Perfuming Tea.—According to a Chinese authority, the principal flowers used in perfuming Tea are those of Gardenia radicans, Jasminum Sambac, Aglaia odorata, Ternstrœmia japonica, Camellia Sasanqua, and Olea fragrans, those of the last-named shrub being especially esteemed for the purpose.

Asclepias curassavica.—This, one of the prettiest and most brilliant of Asclepiads, is generally considered to be a stove plant, or one which requires wintering in heat. Having a quantity of it in the autumn, I thought I would try its hardiness. One set of plants was placed in a greenhouse, where they soon perished from damp. Another lot was placed in the dwelling-house, in an airy room where there has been no fire throughout the winter, and where at one time, for a week or more, the temperature could not have been but a degree or two above freezing; they were, of course, kept dry at the root. These have lost most of their foliage; but a few days ago, they were placed in heat, and are already giving signs of growth, thus showing that they will withstand a much lower winter temperature than that to which they are generally subjected.—J. M., *Hawkchurch, near Axminster.*

MR. VICK'S ILLUSTRATIONS.

We often admire the effective way in which woodcuts are used to illustrate articles on rural affairs in America, and in the richly illustrated catalogue of Mr. James Vick, of Rochester, we find the art carried a step farther than is usual. We mean, for example, a variety of diminutive illustrations of the people who succeed and who fail in their gardens. Our own farmers' gardens are paradisaical compared with those one often sees in the Eastern States of America, where the Nettles are frequently allowed to look in through the window. Some are, however, better managed, and here we have a sketch of the "woman whose flower seeds all come up," and a less pleasing one of her whose seeds "come up" after another fashion. Mr. Vick has, so far as we know, not yet figured the ascent of Adler's chickens from the Radish beds, but we shall certainly for the future search his catalogues for novelties of this kind.

"The woman whose flower seeds all came up."

"The woman whose seeds are scratched up."

Ice without an Ice-house.—Some years ago we had an ice-stack made, and this was repeated several years. The ice kept well, and thus it proved to be a simple way of providing ice in hot weather. The following was the course which we pursued:—A space was fixed upon within ten or twelve yards of the lake, on the turf, and fully exposed—no shade from trees or anything. This space was covered with faggots of brushwood, one faggot thick, placed close together, levelled, and then covered with a layer of straw. The ice was drawn off the lake, and the walls, as I may call them, were built up with large pieces of ice of all shapes, the joints being broken; in fact, they were put together like the stones in a rubble wall, the thickness being about 18 in. or 2 ft. Inside this the space was filled with pounded ice. The walls were carried up about 6 ft. high, and the pounded ice drawn in at the top in the form of a ridge. When all was packed together, the ridge was covered with a layer of straw, and some straight wheat-straw was placed round the sides. At about 2 ft. from the ice-wall some wooden hurdles were driven into the ground, and the space between filled with leaves trodden firmly in. The ridge was covered in a similar way. Over all, leaves included, was placed a layer of straw, the outside being neatly thatched. When finished, the ice-stack looked like a small hay-stack. In this way the ice kept very well all the summer. I believe a good layer of sawdust or cocoa-nut refuse next the ice, before the leaves were put on, would have been an advantage. To those (says a correspondent of "The Florist") who have no ice-house, I can recommend the stack system. Of late years we have not required to adopt this plan, as we have an excellent ice-house that gives us all that we require. I have often wondered that hotel-keepers in the country, who mostly have the opportunity, do not make some provision of this kind.

Assisting the Germination of Seeds.—According to Professor Bottger, a moderately concentrated solution of caustic soda or potash seems to promote the germination of seeds, even more than ammonia. Seeds after soaking but a few hours in diluted potash solution put forth radicles.

THE KITCHEN GARDEN.

THE CULTIVATION OF ONIONS.

The principal requirements for this crop are, thorough and deep tillage in autumn, if the land be unoccupied, or as soon after as possible, accompanied with liberal manuring. Deep stirring of the land is beneficial in many ways; it assists the drainage where the land is retentive, and, if dry and porous, it facilitates the ascent of moisture in hot weather; but in trenching land for Onions, on no account should any of the bad sub-soil be brought to the surface. Permanent improvements in this way should be done, when some other crop will follow. In addition to the manure added, during the autumn or winter culture I strongly recommend a rich surface-dressing lightly forked in, and mixed with the top soil just previous to sowing the seeds; in fact, if short of manure, I should apply it all in this way, but in preparing the ground for Onions, the second crop has to be thought of, as, after the Onions are harvested, the land is hoed up deeply, and in September it is planted with Cabbages without any other preparation. For a surface-dressing applied in the way I have indicated, any thoroughly decomposed manure will do. The decayed vegetable matter that accumulates at the rubbish heap, if well looked after, forms a most valuable fertiliser for any crop; in fact, scarcely any manure that is well decomposed and has any fertilising power at all can fail to improve the soil for the growth of Onions. If there be any reason to dread the attacks of the Onion maggot, sprinkle ½ lb. of salt per square yard all over the surface; soot is also beneficial, but salt is more effectual than anything I have ever tried, and is besides a valuable stimulant, especially suitable for a dry, porous soil from its known affinity for moisture. The best time in most places for sowing spring Onions is as early in March as the weather will permit. The ground should be made firm either by treading or rolling, and raked level; sow in shallow drills 9 in. apart; cover the seeds thinly, and tread or roll in: sowing in loose ground and covering deeply is the chief cause of Onions growing thicknecked; but, sown in rows, the plants can be easily cleaned and the surface lightly stirred. In the growth of Onions deep stirring should be avoided, as the bulbs swell better and faster, resting on firm ground. This, of course, should not prevent a free use of the Dutch hoe to keep down weeds. If very large Onions be required, a few rows may be sown at wider intervals, and be thinned out to 5 or 6 in. in the rows, but for the bulk of the crop 9 in. between the rows and from 2 to 3 in. in the rows will be ample, as when growing they make room for themselves by swelling out on each side of the line.

Autumn-sown Onions.

In most large establishments it is necessary to keep up a supply of large-sized Onions all the year round, and, in such cases, the autumn-sown crop becomes as important as that sown in spring. I have found it best to make two sowings, the first at the end of July, and the last about the middle of August. The former sowing does for drawing green from the seed-bed, and a large portion of the latter are transplanted in February on land prepared, as for the spring-sown crop, in an open situation. Some people have an idea that transplanted Onions do not thrive so well as those not transplanted—there cannot, however, be a greater delusion. It is a very old practice, and in difficult soils, or where the maggot is destructive, Onions sown in August on a warm dry border, and transplanted in February, may generally be relied upon. The kinds usually sown in autumn are the Tripoli and Lisbon, but any other kind will succeed equally well, such as the White Spanish, Brown Globe, the Silver-skinned, and others. The Tripoli grows to a large size, but it is not a good keeper, but does well for summer use. Brown Globe and James' Long Keeping, if well grown and ripened, will keep till the autumn-sown Onions are large enough to succeed them. The different varieties of Silver-skinned are the kinds most generally esteemed for pickling, and should be sown thickly broadcast in March on hard ground without manure, covered lightly, and the beds trenched or beaten firmly with the back of the spade. In making the most of any new—or reputedly new—kind sent out in small packets, I generally sow the seeds in a box, and start in heat early in spring, harden off, and transplant to the open ground when large enough. In this way time is gained, and the seeds are made the most of. When young green Onions are required for salads all the year round, successional sowings must be made; during winter and early spring sow either on a slight hot-bed, or in boxes in a warm house. The latter plan generally gives least trouble. E. Hobday.

Ramsey Abbey.

HEELING-IN BROCCOLI.

"A. D." states (see p. 188) that Broccoli grown in private gardens is less able to bear severe frost, through the ground being deeply dug and heavily manured. Does he mean to say that market gardeners do not dig deeply and manure heavily? The majority of cultivators in private places would be very glad if they could get only half the manure which market growers use. He says heeling-in, to have effect, should be done in August. If done so early, it would seriously injure the crop by stopping the plants from attaining more than half their usual size through the check they would sustain when in the height of their growth, and it would be two months too early to have the desired effect in the way of preservation. Any one who has planted a bed of Cabbages at the latter end of October or beginning of November, cannot fail to have noticed how well these stand a severe winter compared with the earlier planted crop, evidently through the check they receive later in the season; or how is it that in an autumn when everything has been growing vigorously almost up to Christmas, much greater injury is done by severe frost ensuing than on seasons when growth has been checked beforehand by colder weather? "A. D." appears not to fully understand the process as usually carried out. Heeling-in plants of any kind ordinarily means their being taken completely up and again put in the ground. This is not the way in which gardeners treat their Broccoli crop, except when lifted with a view to clear the ground for trenching, or for some other crop that would require to be put in before the Broccoli was off in the spring, or to remove it from a damp position wherein it may happen to have been grown to a drier one, in which it will obviously stand better during severe frost, but the more general practice is to lay in the Broccoli without disturbing all the roots. If "A. D." had to grow vegetables for a large private family, he would know that the gardener who has this to do is in a very different position from the grower for market purposes. The latter will neither plant Broccoli nor any other crop for which his soil and situation are not fully adapted; the private cultivator, on the other hand, is generally obliged to grow vegetables of all kinds, for many of which the land with which he has to deal is not adapted. Many good vegetable growers plant their Broccoli without digging on ground that has borne some other crop, with a view to keep the plants in a smaller and more stunted tough state than they otherwise would be. I have frequently tried this method without laying the plants against the more liberal system of deep digging and laying, and in severe winters the laid plants invariably stood the best, although they were double the size of the others. But there is one indispensable condition in reference to the cultivation of Broccoli to enable it to withstand severe weather, and that is to grow the plants in a way that will impart to them as much solidity as possible. This can only be done by giving them plenty of room. Where the nature of the ground is such as to produce very large plants, they must be planted further apart. Instead of deep digging, as "A. D." alleges, being conducive to a tender condition, I have always found that Broccoli grown in ground that had been deeply trenched the year before stood the best, obviously through such ground being drier near the top where the roots were. As the whole Brassica family are naturally surface-rooters, deeply stirring the soil will not induce their roots to descend. T. Baines.

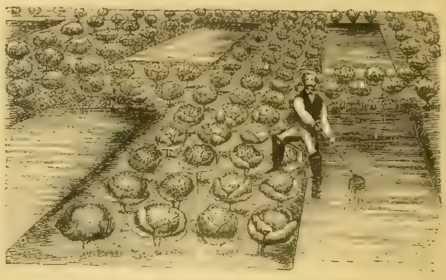
Although in the main I believe this to be a good old practice, yet, for reasons which, to me at least, are satisfactory, I have for several years discontinued it. In the first place, I found that the check caused by the mutilation of roots and often of foliage, certainly reduced the size of the heads—I am speaking now of late Broccoli—and this had to be submitted to every year, as there is at present no means of telling when a severe winter is coming. I found also that by giving the plants more room between the rows, and, though to a less degree, in the rows, by planting early strong plants, I procured a much hardier, stronger, and dwarfer growth, capable of standing more cold; and then, early in October, instead of heeling them in, I gave them a second earthing up with the spade, heaping the soil well up their stems—the increased space between the rows enabling this to be done—so that the crowns of foliage rested, as it were, on a ridge of comparatively dry soil. The heavy autumn and winter rains ran down into the trenches, leaving the ridges drier, and, consequently, of a higher temperature than if all the cold rain had passed through instead of running off; whilst the snow, instead of breaking down the leaves, and ultimately melting away and leaving the hearts of the plants exposed, remained on the plants, as the leaves were supported by the ridges of soil beneath. I noticed the effect of this last winter especially, when there were many Broccoli plants destroyed in this neighbourhood, whilst I scarcely lost one. If severe weather sets in unaccompanied by snow, all that is necessary is to lay a few evergreen branches just over the hearts of the plants, or sprays of Beech with the dead leaves clinging to them, will answer as well, as it is as much for the shade imparted as for shelter. We know that a difference in climate and rainfall leads us to adopt different modes of treatment to secure given results, and I do not say the treatment recommended above would have the same results everywhere; but, of one thing I feel sure, that thick planting in freshly-dug land is the natural precursor of soft, sappy growth, that succumbs to a degree of cold that plants, differently treated, would pass through uninjured.
E. Hobday.

"A. D." (see p. 188) tries hard to back up his statement condemnatory of the advantages of heeling-in Broccoli for standing severe winters. That the difference in the culture of Broccoli in market and private gardens has some effect upon the hardiness of the plant, there can be no doubt, and the heeling-in could not be carried out where acres of Broccoli are grown; but even then, in severe winters, such as the one of 1867, it would have paid market gardeners to have heeled-in their Broccoli, for all became useless after the thaw set in on the 23rd of January of that year. I had some breaks of Snow's Winter and Dilcock's Bride heeled-in and protected that year, and saved all; whilst other sorts, not so treated, were all lost, and none of the Brassica tribe escaped, except some late Savoys and Curled Greens. William Tillery.

Welbeck.

CAULIFLOWER GROWING AT ERFURT.

The Cauliflower around Erfurt is grown in low, swampy ground, which is thrown up in wide ridges. The plants are set on the ridges, and between these are ditches of water. Every dry day the water is bailed from these ditches upon the growing plants, and the result is Cauliflower of enormous size, compact, and almost as white as snow. The annexed engraving gives a good idea of these Cauliflower gardens and the process of watering. In the ditches Water-cress is grown, both for cutting and seed. James Vick.



Cauliflower and Water-cress Culture at Erfurt.

Celery, Red and White.—As a white sort, I find Dwarf Incomparable to be one of the best; for, although it looks insignificant when growing beside some of the long-leaved kinds, it compares favourably with them when trimmed for use, as the heart is solid and compact, and there is little useless leaf. The Leicester Red is also an excellent kind, which, with us, has kept well. As regards the merits of growing Celery in single lines, or double and treble ones, I prefer the old plan of single rows; for, although a greater number of plants may be crowded into a given space by the double or treble systems, I question whether any other advantage is derived from its adoption, or even that the development of the Celery is so satisfactory.—J. Groom, *Henham.*

Peas on Hot Sandy Soils.—Get the ground well manured and dug deeply, 18 in. being by no means too much. After being well dug over, and all ready for sowing, and after stretching the line where you intend sowing, in place of drawing a shallow drill with the end of a draw-hoe, take a spade, turn out a small trench—at least 8 in. deep—and, as you are digging it out, keep one foot along in the bottom, making it wide and firm; I make the bottoms of the trench, says a writer in the "Gardener," where we sow Peas, from 6 to 8 in. wide. After sowing and well regulating the Peas in the bottoms of the trench, fill it only about half full, and pat down the soil pretty firmly with the head of a rake. But when the Peas are up 6 in., fill up the sides of the Peas with stable manure and litter about half rotten; never earth up, according to the old fashion, which, when followed out on sandy soil, soon cripples Peas. Stake directly after putting the littery manure along by the drills; one can do it far better when the Peas are about 6 in. high than when left until they are higher. We always place some small twigs in the row of Peas; this assists them very greatly, as they will take hold of these ere they can fasten themselves to the stakes outside the rows. After they are staked, if the weather keeps hot, mulch all along the outside of the stakes; and when you have occasion to water the rows, the water will run towards the roots.

Asparagus in Trenches.—Asparagus delights in abundant supplies of water; and, in deep, well-drained soils, this might be made to convey nearly all the manure necessary for its successful cultivation, with the exception of mulchings and occasional sprinklings of salt. I believe there is no occasion to raise the beds into such mounds as are commonly made. A moisture-loving plant, like Asparagus, would do better (except on cold clay soil) if planted in trenches rather than on mounds, and this system of trench-planting is especially adapted for poor, light, sandy soils, as it offers such facilities for easily flooding the plants with water. In making new plantations, whether the old bed system, with its elaborate preparation (and I have no desire to find particular fault with it) be adopted, or healthy plants from one to two years old, are the best for planting, and the most suitable time is just after growth has commenced, usually in April. Where many roots are required for forcing I should certainly recommend it to be grown in single rows, not less than 2 ft. apart from each other, and at least 1 ft. apart in the rows. The way to secure fine produce is to encourage individual growth by allowing each plant plenty of space for development; this is more profitable than thick planting, where a continual struggle for existence must be going on. It is best to raise a bed of seedlings every year sufficient to make a new plantation to take the place of that removed for forcing, or rather to come on in succession. In planting make a drill or trench wide enough to receive the roots without cramping them, cover with 2 in. of fine light soil, and water abundantly in dry weather, giving sewage or liquid manure whenever possible. When taking up the roots allow as little exposure to the air as possible to avoid giving a check.—S. J.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Williams's Matchless Red Celery.—I find this to be the best and hardiest Red Celery with which I am acquainted. It is a strong grower, solid, crisp, and excellent in flavour. It has withstood this winter's frost without damage, except a little splitting of the leaf-stems at the surface of the soil; while Cole's Defiance and Manchester Giant are rotten to a pulp half-way to the roots, and the insides of the stalks, in some cases, to the roots.—W. W. Eaglehurst, *Fawley, Hants.*

White Emperor Potato.—This is a true white sport from the well-known red kind of that name, and is in every respect as handsome—indeed, from what I have seen of it, I am induced to believe that it will prove second to none as a handsome White Round Potato. It is not in commerce, but probably will be at the end of the year; for there are a number of choice new kinds being brought forward this year in anticipation of the great demand that is certain to arise should we be favoured with a good season.—D.

Mushrooms in Melon-beds.—We cover our old Melon-beds in houses in winter with coal ashes, and use them for Cinerarias, Calceolarias. and miscellaneous plants, and although the houses are kept quite cold, Mushrooms continue to spring up in them the whole winter through. If, too, any bed be left undisturbed in spring after the earliest Melons are started, and there are plenty of heat and moisture in the house, an abundant crop of Mushrooms may be confidently relied on, and all this without the introduction of spawn.—J. Groom.

New American Potato Ruby.—At the recent International Potato Exhibition a small group of seedling Potatoes, exhibited by Messrs. Bliss & Son, of New York, attracted attention, as presenting the latest American improvements in that esculent. Only one variety, however, met with general approbation as being distinct in appearance and likely to prove an acquisition. That was Pringle's No. 10, a long, smooth, handsome tuber, with a skin much the colour of Vermont Beauty, but, in shape, resembling that of the Early Rose. The eyes were shallow, and of a pretty carmine tint. I observe that Messrs. Bliss are now offering this Potato under the name of Ruby, and, should it prove to be as acceptable a variety amongst coloured kinds as Snowflake is amongst Whites, it will certainly become popular.—A. D.

TREES AND SHRUBS.

SPINDLE TREES.

History and Distribution.

The name Euonymus was applied to the common European Spindle tree long before the Linnean nomenclature was published, and Linnæus simply adopted it as the generic name for the species known to him in 1764. In his "Species Plantarum" he describes E. europæus, with two varieties, latifolius and tenuifolius, and E. americanus. The latter was figured in Plukenet's "Phytographia" as early as 1691 under the name of E. virginianus. The work just quoted is the earliest English botanical work containing tolerably faithful drawings of plants; it includes 2740 figures, many of them very good. Upwards of fifty species of Euonymus have been described, twenty-seven of which are found in the mountains of India. They attain their maximum in the mountains of North India, and in China and Japan, but the genus is very widely dispersed. There are four European species, three or four temperate North American, two Mexican, several in the Indian Archipelago, and one species reaches north-eastern Australia. Although several deciduous species were in cultivation in the last century, the genus dates the popularity it now enjoys from comparatively recent times. In 1804 the ordinary green-leaved state of E. japonicus was introduced, but it does not appear to have attracted great attention, and it is only by degrees that its value for sea-side planting and other purposes has been found out. The first variegated varieties appear to have been sent to this country about 1835, and Siebold successively introduced from Japan most of the many beautiful varieties now in cultivation. It is a remarkable fact that none of these varieties have ever been figured in any of the botanical and horticultural journals either of this country or the Continent, and yet now it would be difficult to find a garden without a Euonymus in it. There is a figure of the ordinary green state in the "Bot. Register," vol. xxx., t. 36, but it is a very poor one.

Culture.

The varieties of E. japonicus prefer a light soil and an elevated situation, or the vicinity of the sea. In low situations, and on heavy wet soils, they suffer very much from frost, even in the neighbourhood of London, especially when quite small. But there are so many uses for these plants in pots and against walls, &c., that they should find a place in almost every garden, even although not perfectly hardy in the colder parts of the kingdom. On the southern and western coasts they are perfectly at home, but they very rarely produce flowers even in the mildest parts. They are easily propagated by cuttings in the open ground, or in a cold frame or pit, according to the situation; and they are raised by thousands for the open ground, window-sill decoration, &c. They will bear close pruning better than almost any evergreen shrubs in cultivation, and most of them are rapid growers. As they are very cheap, it is of little importance that they are sometimes killed outright in the less favourable situations, because they may be replaced at a small cost. Another good quality they possess is that they transplant well. The deciduous European and North American species described below may be raised from seed, cuttings, or suckers, and they will thrive in almost any soil and situation. The natural habitat of all these species appears to be on the banks of streams and rivers. The North Indian species are only suitable for out-door culture in the warmer parts of the south-west. Many of these have scarcely been tried, and therefore little is actually known of their hardiness; and it does not follow because other plants found at the same elevation are hardy that these will prove equally so. A few remarkable deciduous species from north-eastern Asia are included in the selection below.

European Species.

(All having deciduous leaves, or only half-evergreen).

1. E. europæus.—The common Spindle tree is one of the most ornamental of our native shrubs in autumn, when the pale scarlet fruit is open, revealing the orange-coloured aril of the seeds; but as there are several handsomer species in cultivation, notably latifolius and atropurpureus, it is scarcely worthy of a place in the garden. In mild winters it is like the indigenous Privet, almost evergreen. There are several varieties, including one with variegated leaves, and another with a white capsule; but the most desirable is the variety nanus, from the Caucasus, a dwarf, trailing shrub, with very small narrow leaves, 1 to 2 in. long; it is suitable for running over rockwork. This species has a wide range of distribution in Europe, North Africa, and Western Asia.

2. E. latifolius.—This Linnæus regarded as a variety of the last, but it is now generally admitted to be a distinct species, and it is far superior as an ornamental shrub. It has oblong-lanceolate, acutely acuminate, finely toothed leaves, 3 to 5 or occasionally 6 in. long, and the flower-cymes are borne on much longer (usually 2½ to 4 in.) peduncles. The capsule, too, is more highly coloured. According to Loudon this species is easily distinguished by its reddish-green bark, and long-pointed, dark brown leaf-buds. A native of some parts of the Rhine Valley, Herzegovina, Carniola, &c., in Europe, and possibly also of North-eastern Asia.

3. E. verrucosus.—A very distinct species, easily known by its slender red verrucose or warty shoots. It has nearly sessile ovate-lanceolate, acuminate, crenate-serrate leaves, about 2 in. long, and the usually three-flowered cymes exceed the leaves in length. The flowers are reddish in colour, and the fruit small and much less conspicuous than in either of the two last. This species is a native of the centre and south of Eastern Europe, and was introduced into this country in 1763.

4. E. velutinus.—This differs from all the other species described here, in being densely clothed with a felt of soft woolly hairs. It is a deciduous shrub, with lanceolate, minutely-toothed leaves, from 2 to 3½ in. long, and rather large flowers, usually borne in pairs, on a peduncle much shorter than the leaves. The fruit is slightly downy. A native of the Eastern Caucasus, introduced in 1838.

American Species.

(Both with deciduous foliage.)

5. E. atropurpureus (Burning Bush).—A tall, upright-growing shrub, from 6 to 14 ft. high; leaves stalked, oval-oblong, pointed; flowers, dark purple, with the parts usually in fours, capsule scarlet and smooth, deeply lobed. A native of the Eastern and Central States, from New York southward; it is common in Kentucky, where the fruit is said to ripen about the middle of October, and remain on the bush nearly all the winter. This fruits in such profusion, and the fruit is so highly coloured that it has received the name of Burning Bush in its native country. In England it does not appear to fruit so freely as E. latifolius, which is an exceedingly striking object in autumn when laden with fruit. Introduced in 1756.

6. E. americanus (Strawberry Bush) Loddiges' Bot. Cab., t. 1322.—This is an erect or trailing shrub, 2 to 5 ft. high, with thicker almost sessile leaves, more variable in shape, varying from ovate to oblong, lanceolate, acute or acuminate; flowers greenish-purple, with the parts usually in fives; carpels rough and warty, or almost prickly, crimson when ripe; aril of the seed scarlet. E. obovatus is a trailing variety of this, with flowering stems 1 to 2 ft. high, and thin, obovate or oblong leaves. It grows in low or wet places. The ordinary form grows on wooded river-banks, from New York and Illinois southwards. In Kentucky it is said to be a very striking object overhanging the perpendicular rocks of some of the water-courses. It was introduced into this country in 1683, but it is rarely seen now.

Chinese and Japanese Species.

1. Species with evergreen leaves.

7. E. hederaceus.—A prostrate or trailing (or sometimes erect) shrub, with broad, thick leaves and angular branches, which readily throw out roots when trailing over rocks. Leaves stalked, usually ovate, with a tapering point 2 to 3 in. long and narrowed at the base, but varying to narrow, oval-elliptical, or nearly lanceolate, or occasionally very broad and obtuse, of Laurel-like consistency, with few prominent veins. Flowers greenish white, few together in very short cymes. Capsule nearly globular, with slight furrows answering to the partitions. Seed enveloped in a scarlet aril. Colonel Champion first discovered this singular species spreading over the rocks in the Happy Valley, Hong Kong, and Wilford afterwards found an erect tree of the same species.

8. E. nitidus.—An evergreen shrub, with thick, leathery, ovate or obovate, entire, glossy leaves, about 2 in. long. Flowers greenish, in axillary cymes, shorter than the leaves. Capsule naked, red. This species was sent home by Fortune, and was briefly described by Dr. Lindley in the sixth volume of the "Transactions of the Royal Horticultural Society," under the name of E. sinensis. He speaks of it there as likely to prove hardy, but it seems to have disappeared from cultivation. It is a native of the island of Hong Kong and the adjacent mainland, and is, therefore, certainly not hardy in this country. There are specimens of it in Griffith's herbarium at Kew, from Bengal, where it is probably an introduced plant.

9. E. longifolius.—An evergreen species remarkable for its long, narrow leaves, 4 to 6 in. long, and ½ to 1½ in. broad. The light green flowers are borne in dense, shortly-stalked cymes. Capsules reddish-coloured, flat at the top, with spreading rounded lobes. This is also a native of Hong Kong, and though not hardy in Britain, except such exceptionally rainy parts as the Scilly Isles, it would be in many countries where THE GARDEN finds readers.

10. E. laxiflorus.—A perfectly glabrous, erect evergreen shrub, resembling E. japonicus. Leaves stalked, ovate-elliptical, obtusely acuminate, 1½ to 3 in. long, quite entire, or with a few crenatures, tapering at the base, smooth and shining. Flowers purplish, rather large for the genus, arranged in loose cymes nearly as long as the leaves. Capsule flat at the top, with spreading lobes. A very ornamental shrub from Hong Kong.

11. E. japonicus.—This species is now so well known as to scarcely need description. Introduced at the beginning of the present century, it has been propagated by thousands or even by millions, and now, in the south, at least, it has become one of the commonest shrubs in small town gardens, and in many towns on the sea-coast, where it finds the most favourable conditions, it is simply invaluable, and greatly relieves the former monotony of Tamarisk. Besides the normal variety with glossy dark green leaves, several others have been introduced from Japan, there are the varieties foliis aureo et argenteo marginatis, in which the leaves are elegantly bordered with white or yellow; E. j. foliis variegatis has the leaves variously marked and variegated with white or yellow; medio picta has leaves with a yellow centre, bordered with green; and there is a set of broad-leaved varieties which bear the additional appellation of latifolia. A variety with curled leaves is called crispa, and a pretty dwarf variety of compact and small foliage is called microphylla. Coming to the radicans set of varieties, we should mention that Professor Koch (Dendrologie) contends that the true radicans is distinct as a species from E. japonicus. We cannot concur in this view for several reasons. In the first place, there are several other species, E. hederaceus and echinatus, for example, which exhibit the same peculiarity of scandent and erect varieties; and, secondly, botanists who have had opportunities of investigating the question in their native country assert that they are simply states of the same species. In the Herbarium at Kew there are wild or at all events Japanese specimens of the varieties radicans, spontanea, with obovate-lanceolate leaves, and the variety foliis aureo variegatis. Whether belonging to a natural species or otherwise, the varieties of radicans are charming shrubs for covering small spaces on walls, rock-work, &c., attaching themselves by adventitious roots, like the Ivy. The best is, perhaps, the silver variegated variety. But the varieties foliis roseo marginatis, foliis aureo marginatis, tricolor, &c., are all deserving of a place in the garden. The Japanese and Chinese, it would appear, are as partial to them as we are. The ordinary E. japonicus is commonly employed for forming hedges in Japan, and, according to a note accompanying one of Oldham's specimens, it grows abundantly near the sea. In this country it rarely flowers, and we never heard of its bearing its nearly globular capsules. Indeed, we only heard of its flowering in Brighton for the first time last year.

2. Species with deciduous leaves.

12. E. subtriflorus.—A deciduous or half-deciduous shrub, with small ovate-lanceolate acuminate leaves, 1 to 2 in. long, very finely saw-toothed, with very short stalks, smooth. Flowers usually, but not always, in threes, on a peduncle about half as long as the leaves. Capsule deeply lobed, in fact, the cells almost become separate carpels, and two or three of them are sometimes abortive. A common Japanese shrub, not yet in cultivation in this country. Dr. Regel considers this a variety of E. Thunbergianus.

13. E. Sieboldianus.—A deciduous shrub, with very variable leaves as to size and shape, ranging from 2 to 6 in. in length, and lanceolate, oblong, or obovate, rounded at the top or with a tapering point. Capsule with four acute angles, slightly warted. A native of Japan and Sachalin Island, possessing no particularly ornamental features.

14. E. Maackii.—Near E. europæus, but differing in its much harder somewhat leathery leaves, smooth, not rugulose, below, the upper ones elliptical lanceolate, with a long tapering point, margin saw-toothed, and in its violet-black (not yellow) anthers. Bark of the old wood of an obscure purple-black. A native of the Amur country, in North-east Asia, discovered by Maack. Judging from dried specimens, we should think this is a variety of E. europæus, and, if specifically distinct, it is not very different in general appearance. Regel, in his "Flora Ussuriensis," regards it as a variety of E. europæus.

15. **E. macropterus.**—A very distinct species, approaching E. latifolius in its leaves, which are more or less broadly obovate, with a tapering point. The most remarkable character of this species is its large four-winged capsule, differing in this respect from all the others of the genus from this region. The wings of the capsule are rose-pink, and about ½-in. long. It is a shrub from 8 to 10 ft. high, with branches about an inch in diameter; bark, greyish-brown, with longitudinal plates; lenticels small, whitish. This hardy and doubtless very ornamental species grows in rocky ground on the banks of the Amur river, on the island of Sachalin, and on the coast of Manchuria.

16. **E. Thunbergianus** (Melanocarya alata, Turczaninow in the "Moscow Bulletin," xxxi., p. 1; Celastrus alatus Thunberg).—A deciduous species, remarkable for the broad, corky wings of the young branches. It has ovate-lanceolate, acuminate, very finely serrated, glabrous leaves, from 1½ to 2 in. long, and borne on very short stalks; flowers small, capsule often reduced by abortion to a single, oblong, cylindrical carpel. This very distinct species is widely spread in Japan, the Korea, Amur, &c. It is described as a charming shrub by Koch, who states that it is in cultivation in the Berlin Botanic Garden.

17. **E. micranthus.**—There are some specimens in Kew Herbarium from North China under this name, but as the flowers are larger than those of at least half of the species, the name is not an appropriate one. In its foliage this resembles a Poplar, and differs from all other species in the leaves being borne on slender stalks, nearly an inch long. The leaves are perfectly glabrous, ovate or elliptical, tapering into a very long point, and finely serrated, apparently half-evergreen, with long, slender, smooth, yellow-barked branches. E. Bungeanus, of Maximowicz, found in the neighbourhood of Peking, is perhaps the name that should be adopted for this species. Probably the true E. micranthus of Don is a different species; and in Hooker's "Flora of India" it is doubtfully referred to E. fimbriatus.

North Indian Species.

(Chiefly evergreens).

18. **E. grandiflorus.**—A small evergreen tree, or sometimes bushy. Leaves 3 to 4 in. long, ovate-lanceolate to obovate or obovate-oblong, minutely serrated upwards, shining and dark green above, pale beneath, or almost black in dried specimens. Flowers with the parts in fours, usually three together, on slender peduncles, nearly equalling the leaves, from ¾ to nearly 1 in. in diameter. Petals white, nearly orbicular. Fruit ½ in. in diameter, globose, with four rounded angles, yellow seeds, black, shining, partly enveloped in a scarlet aril. This is one of the most ornamental species of the genus, whether in flower or in fruit, the flowers being very large for the genus, and comparatively showy. It is a native of the temperate regions of the Western Himalaya Mountains. In Khasia it is found at an elevation of between 4000 and 6000 ft. Introduced in 1824. There is no figure of it in any easily accessible books, but there is a fine plate of it in Wallich's "Plantæ Asiaticæ Rariores," t. 254.

19. **E. tingens.**—A small evergreen tree, 16 to 20 ft. high, with a short erect trunk, 2½ to 3 ft. in girth, with a few branches, forming a small rounded crown; leaves 1 to 3 in. long by 8 to 12 lines broad, thick and coriaceous, glabrous and shining, rugose above, ovate or ovate-lanceolate, obtusely serrate or crenate, acute and sometimes shortly acuminate, on short petioles, with brown, subulate, fringed stipules; flowers about ½ in. in diameter, few together in dichotomous, axillary cymes, subtended by fringed bractlets; petals orbicular, with a short claw, white or yellowish, beautifully marked with dark purple veins; fruit, three, four, or five-cornered, not winged; seeds oblong, with a cup-shaped aril. This is also a very ornamental species in its flowers, and Dr. Brandis thinks it may possibly be a variety of E. grandiflorus; but, from a horticultural point of view, it is quite distinct in its elegantly-veined purple and white or yellow flowers; it has a dark ash-grey or yellowish-brown bark covered with numerous yellow tubercles. It is widely distributed in the mountains of Northern India, at an elevation of 6500 to 10,000 ft., and therefore nearly or quite hardy in the milder parts of the United Kingdom. We do not know the date of its introduction into this country, but it has been, and, for aught we know to the contrary, may still be, in cultivation. In some of the botanical dictionaries this species is erroneously reported from Japan.

20. **E. bullatus** (Loddiges' Bot. Cab., t. 1749).—An evergreen shrub or small tree, remarkable for its large, thick, bullate, ovate leaves, which in some specimens are 10 in. long by 4 in. broad, entire, or minutely toothed towards the apex, nerves very prominent below; flowers white, rather small, very numerous in large much-branched cymes; fruit four-lobed, roundish, colour not known to us. A native of the Khasia Mountains, in the sub-tropical regions. It was formerly cultivated by Loddiges, but we have not seen it in a living state.

21. **E. fimbriatus** (E. lacerus, in Brandis's Forest Flora).—An elegant deciduous tree, attaining a height of 25 ft. Leaves 2 to 4 in. long, glabrous, membranous, elliptical, or broadly ovate, shortly acuminate, finely and often doubly serrated. Flowers small, white, very numerous, in umbellate cymes, borne on long, slender peduncles. Capsule with from two to five vertical, long, tapering wings, the valves, when ripe, spreading out flat when open. Seeds ovoid, enclosed in a bright, red aril. This handsome species is a native of the temperate regions of the mountains of northern India, occurring at an elevation of between 10,000 and 12,000 ft. in Sikkim, and between 8000 and 10,000 in the north-west Himalaya. Dr. Brandis says that the dark green leaves change red in autumn before falling, and the bright red seeds are strung and used as ornaments. Professor Lawson thinks the woodcut given in Paxton's "Flower Garden" ii., t. 316, can hardly belong to this species, the leaves resembling more those of E. pendulus or E. frigidus.

22. **E. frigidus.**—A dwarf shrub, with thick, succulent shoots and very variable leaves, linear, linear-lanceolate, to broadly-lanceolate, acuminate, serrate, 3 to 5 in. long by ¾ to 1½ in. broad. Flowers very small and white. Fruit with four long tapering wings. A native of Sikkim, Himalaya, at 8000 to 12,000 ft. elevation, and most likely quite hardy in this country. There is a variety with leaves 1 ft. long by ¾ of an inch wide.

23. **E. echinatus** (Bot. Mag. t. 2767; E. scandens of Graham).—An evergreen shrub, often climbing and trailing like Ivy to a considerable distance over trees and damp-shaded rocks, attaching itself by dense tufts of adventitious roots; or occasionally a small, handsome tree 15 to 20 ft. high, with a short, straight trunk 12 to 16 in. in girth. Branchlets tetragonal, with four thick lines decurrent from either side of the petioles. Leaves 2 to 3 in. long, coriaceous, oblong-lanceolate, crenate, or obtusely serrate, borne on short stalks. Cymes axillary, shorter than the leaves, with three to ten pea-green, scentless flowers. Capsule globose, thickly beset with long prickles. Seeds entirely enveloped in a thin scarlet aril. This species is very distinct from all others in its spiny fruit. It is common in many parts of the Himalayan range between 7000 and 12,000 ft. above the level of the sea. It was introduced in 1824, and there is a figure of it in the "Botanical Magazine" quoted above. According to Dr. Brandis, the fruit often remains hanging on the branches for several months. The same, or a very closely allied species, is found in China and the Loo-Choo Islands.

24. **E. theæfolius.**—A small erect shrub, with coriaceous ovate or oblong-lanceolate leaves, resembling those of the Tea shrub. Flowers small, reddish, capsule nearly spherical, the size of a large Pea, obscurely angled and usually only one-seeded. A native of the Himalayan range, at an elevation of between 4000 and 8000 ft. This does not appear to have been introduced into this country yet.

25. **E. pendulus.**—An elegant tree, sometimes attaining a height of 40 ft., with a straight trunk 2½ ft. in girth; branchlets slender, pendulous; leaves 2 to 4 in. long, oblong-lanceolate, coriaceous, and shining when young, dull grey as they become older; flowers white, with fringed oblong petals, about 4 lines in diameter, arranged in three to twenty flowered cymes; capsule three or four-lobed, the angles and back more or less winged; seeds inclosed in a thin aril. This handsome species is widely dispersed in the Himalayan mountains, though nowhere common. It ranges between 2500 and 8500 ft. above the sea level, and varies considerably in stature at different elevations. It has been confounded with E. japonicus, but it is quite distinct in its fruit and other characters from that species.

26. **E. Hamiltonianus.**—A large shrub, or in favourable situations a small tree, with round, glabrous, green branchlets; leaves 2 to 5 in. long, glabrous, membranous, oblong-lanceolate, finely serrate, acuminate, borne on petioles 4 to 6 lines long; flowers greenish white, small; petals oblong, obtuse, not fringed; capsule yellow, deeply four-lobed, not winged; seeds entirely enveloped in a scarlet aril. This ornamental species is hardy in the milder parts of the United Kingdom, and forms a fine greenhouse shrub. It is found in the Himalayan range, from the Indus to Bhutan, at an elevation of 3800 to 8500 ft. Dr. Brandis informs us that it usually grows in mixed forests where there is some shade. The wood is beautifully white, compact, and close, and is used for making spoons. The young shoots and leaves are lopped for fodder. Introduced in 1825. There are some specimens in Kew Herbarium from Japan and the Korea under this name, but they probably belong to another species.

W. B. Hemsley.

ROYAL HORTICULTURAL SOCIETY.

At the adjourned meeting of the 10th inst., when the vote of want of confidence in the Council was rejected, a Committee of six was chosen to confer with the Council. Being one of the six I had a right to advise, and sent to the President what I believe to be a working scheme which might still save the Society, whose days are numbered, unless a new source of support and income is found, and that without delay. George F. Wilson.

Heatherbank, Weybridge Heath.

The following is the scheme to which allusion has just been made:—"The Council of the Royal Horticultural Society apply to the horticulturists of the country under circumstances of great difficulty. The Society is doing important and useful work which benefits all who value their gardens or who care for fruit, vegetables, or flowers. Its scientific Committee is now the recognised authority on new plant plagues of all descriptions, and does much other valuable work. Its Fruit and Floral Committees examine new fruits, vegetables and flowers, work which can only be done by a great central society; their judgments, immediately published by means of the gardening press, are now received with respect through the country. In the Society's garden at Chiswick flowers, fruit, and vegetables are grown side by side, are tested and judged by the highest authorities, and troublesome synonyms got rid of. The Society's income does not meet its necessary expenditure. Her Majesty's Commissioners will extend the lease of the South Kensington Garden if the income of the Society within three years is raised to £10,000 a year. Great efforts are being made to induce residents in the neighbourhood of the South Kensington Garden to become Fellows in order to preserve their recreation ground, but it is doubted that sufficient and timely aid will come in from this source. Many of the best horticulturists of the country have held aloof from the Society mainly on the ground that too much of its income goes to keep up the South Kensington Garden rather than to advance horticultural science, and in the belief that while resident Fellows have ample consideration for their subscriptions, Fellows at a distance have not so. It is now proposed to have two classes of Fellows, those who pay the present subscription of £4 4s. and £2 2s., who will have all the privileges of the Society, and those who care only for the horticultural work of the Society; these last will be made Fellows for an annual subscription of one guinea, and will be admitted to all shows great and small, and to the Chiswick Garden, but will not have the use of the South Kensington garden as a recreation ground, or be admitted on Saturday when the band plays, or to any non-horticultural entertainment. Country horticulturists are reminded that it is much easier to improve an existing society than to raise up a new one; that the Society has the name 'Royal,' and the garden at Chiswick, with all its old associations; and that a guinea subscription to a working, useful society is a very moderate one. The Council now call on all good horticulturists throughout the country, and especially on lady and clergymen horticulturists, to come forward and help them by sending in their names as would-be guinea Fellows, by making lists and forming local committees, and by canvassing such of their friends as would be suitable Fellows, and to do this without loss of time. Any guinea subscriber will be liable only for the amount of his subscription." H. W.

Darwin's "Insectivorous Plants."—The following is the closing paragraph of Principal Dawson's review of this work in the January number of "The International Review:"—"When he closes his long and elaborate investigation of Drosera with the words, 'We see how little has been made out in comparison with what remains unexplained and unknown,' we have an admonition to humility and patient inquiry which may well serve us as a closing thought. These words occur at the end of a tersely written record of experiments and observations extending over 270 pages. The whole of these experiments and observations relate to the structures and functions of a little leaf ¼ in. in diameter, and they are the work of one of the most accomplished naturalists of our time, extending over a period of fifteen years, and assisted by many specialists in the chemical and physiological questions involved. Yet the impression remains in the mind that, after all, little has been made out compared with what remains unexplained and unknown, even in relation to this almost inappreciable fragment of the great system of Nature."

Explaining it.—In speaking in rather complimentary terms of a young artist's work, Mr. Ruskin made a remark to the effect that he would have to go through the Valley of Humiliation before reaching the Mountains of Beatitude. Hereupon the young artist wrote to Mr. Ruskin saying that he greatly valued the advice of so eminent a critic, and that he would be highly delighted to know what this phrase actually meant. Mr. Ruskin's reply was characteristically whimsical. He told his correspondent to take a tumbler, place it bottom upwards, put half a dozen Cherries round the tumbler, and send him a water-colour sketch of this subject; then he would tell him his meaning. The artist, manfully going into the Valley of Humiliation, did as he was bid, and sent the sketch. Mr. Ruskin returned the sketch, quietly asking why the shadow of Cherry number six had been made broader than the shadow of Cherry number five, whereas it ought to have been narrower? The ingenuous painter humbly replied that, although he might have made a mistake, his object had been to elicit from the great master of artistic criticism some definite explanation of the enigmatical phrase above quoted. The answer to this was not enigmatical. "If you can't draw a Cherry, why do you presume to paint women's heads?"

CENTRAL HORTICULTURAL SOCIETY OF FRANCE.

At the fortnightly meeting of this Society, held on the 9th of December last, M. Hediard, foreign fruit merchant, sent a number of fruits of Sechium edule, which somewhat resemble in shape the Custard Vegetable Marrow. They had been received by him from Algiers, where they are highly esteemed as a vegetable, tasting, when cooked, something like Cauliflowers, and called by the French colony there Chayottes. The native country of this vegetable is at present unknown, De Candolle, in his "Prodromus," merely stating that it is to be found in great quantities in the Antilles. The Committee of the Society, who had tasted it, did not report so favourably as to its merits as might have been expected from the high estimation in which it is held in Algiers; but inexperience as to the proper method of cooking and preparing it may have had a good deal to do with this, and on further acquaintance this vegetable may, I should think, improve. At the same meeting a letter was read from M. L'Herron, a nurseryman at Brest (Finistère) claiming the merit of having invented some special method of cultivating Camellias in the open air without any kind of protection, which method is as yet known to no one but himself. Another letter was read from M. Dubuc, describing a new method of destroying aphides or green fly on Peach trees by copiously syringing the trees in time of severe frost, the coating of ice formed on all the twigs and branches effectively destroying the fly and its eggs, without in any way injuring the trees themselves. M. Dubuc also thinks the same treatment might advantageously be applied to Roses. At the meeting on December 23rd the Duc Decazès was elected President for 1876-7-8-9, obtaining 95 votes out of 183 recorded, the retiring President M. Brouguiart, receiving 83. The popular and eminently efficient Secretary-General, M. Alphonse Lavallée, was re-elected by 162 votes out of 180 recorded for the four years next following, and M. B. Verlot as Secrétaire Général adjoint, and Messieurs J. Leclair, H. R. Dumont, E. Delamare, and J. Duvivier, Joint Secretaries. W. E. G.

The Weather and the Moon.—Mr. Preston Powers' statement in reference to the effect of the moon on vegetation (see p. 168) has induced me to send you the following from the "Visitors' Book" at Bala:

The weather depends on the moon as a rule,
  And I've found that the saying is true,
For at Bala it rains when the moon's at the full,
  And it rains when the moon's at the new;
When the moon's at the quarter, then down comes the rain,
  At the half it's no better, I ween;
When the moon's at three-quarters "it's at it again,"
  And it rains besides mostly between.—A.

NOTES AND QUESTIONS—VARIOUS.

Flower Sticks.—Prunings of Apple trees make the best supports with which I am acquainted for Carnations and similar plants. They are straight, strong, and last for three or four years. They answer better than Hazel, and should always be saved for such purposes.—G. Noakes, *Mountfield Court.*

Picea cephalonica in Perthshire.—A specimen of this beautiful Conifer in the pleasure-ground at Dupplin Castle, measures 50 ft. in height. Its shape is all that could be desired, and taken altogether it must be considered to be one of the finest specimens of its kind in Scotland.—W. Laurie, *Lynwood, Alva.*

Primulas.—In that beautiful and accurate work, "Maund's Botanic Garden," which contains many faithful representations of hardy plants now seldom seen but well deserving a place in the mixed border, at Vol. II. (p. 356) will be found Primula cortusoides, and at Vol. IX. (p. 850) P. amœna, and several other varieties.—Winton.

Hardy Climbers.—Whilst passing some cottages near Norwood Cemetery the other day, I saw a plant of Passiflora cœrulea, trained up the front of a cottage, very heavily laden with fruit—I have never, indeed, on any previous occasion, seen one so profusely and regularly covered with fruit out-of-doors as this was, and, owing to its having the colour of a Magnum Bonum Plum, its appearance was strikingly effective.—E. Bennett, *Rabley.*

The Huon Pine (Dacrydium Franklinii).—Perhaps it may not be generally known that sprays of this beautiful Pine do exceedingly well for dinner-table decoration. I lately saw them used with good effect in a trumpet-shaped glass centre-vase. They were placed all round the mouth of the trumpet, in which were various kinds of flowers and foliage, their graceful pendent forms producing a beautiful effect. They have also the good property of keeping fresh for several weeks together.—W. Laurie, *Lynwood, Alva.*

No. 224.] SATURDAY, MARCH 4, 1876. [Vol. IX.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

PREPARING PLANTS FOR THE FLOWER GARDEN.

There are three classes of plants now in general use in modern flower gardening, viz., tender, half-hardy, and hardy, and it would be difficult to describe which of the three divisions contained the most numerous varieties now in favour. The hardy section, happily in the ascendant, embraces a goodly list; the half-hardy, though still in large numbers, are resigning their long monopoly; while the tender section is subject to severe restriction from the antagonism of climate and locality, numerous though the claimants have lately been for a place, especially among sub-tropical plants. In the last section may be found a few of the most effective subjects we have for massing and for the intricacies of carpet bedding now in fashion. One or two Coleuses, several Alternantheras, the variegated Mesembryanthemums, Iresines, Kleinia repens, &c., are very generally used. Starting now with half-a-dozen good old plants of Coleus in 4-in. pots, and persevering, as cuttings and space increase, by bedding time (the second week in June) several thousands of good plants may be ready. The best way to keep Coleus through the winter is to have a few old plants pot-bound placed high up near the light on a shelf in the stove, and refrain from an overdose of water, or else in a low pit close to the hot-water pipes and glass. A joint with a leaf attached will form a plant; run the knife down the stem between the buds, dividing the node in half; of course, the stock plants must not thus be separated at first, but must be potted on in spring and forced into growth. Coleuses are most expeditiously struck in pans of very wet sand set on any warm surface, such as the hot-water pipes or any fermenting material; later in the season (about April) they may be struck rapidly in the temperature of a Cucumber house without bottom-heat. Coleuses may generally be left to the last, as after the half-hardy plants have been placed in the open air, the glass will be at the service of the Coleuses. Alternantheras are not quite so easily managed; still they may be propagated with great facility with a little attention to their wants. A. amœna, which is the most delicate, can be got up with ease in autumn by planting a dozen plants of it out in a warm pit in August and giving them abundance of water, when they will grow very freely; having struck the cuttings in pans of wet sand in the same pit, transplant them into store pans for the winter, and arrange them on a high shelf in the stove. The stock of Alternantheras may be kept up from year to year by lifting a quantity of the old plants early in the autumn, shaking all the soil from them, and packing them closely in pans or shallow boxes with very little soil. Place them after one watering in a close, warm pit to cause them to root afresh, when they should be moved to a shelf in the stove near the glass. About the end of March they should be divided, and placed in shallow boxes or pans; every small piece with a root will grow; heat them briskly in a moist pit, and, notwithstanding their flowering, they will make rapid growth and be strong, healthy plants by June. It is waste of labour to pot Alternantheras in private gardens; of course, the stock may be increased in spring by cuttings, the same as recommended in autumn, but the plants will not be so large. Mesembryanthemum cristalinum variegatum will strike in September, inserted in boxes with Geraniums without any protection whatever, in the open air. Two or three boxes or pans a foot square will supply thousands of cuttings in spring. It requires to be wintered in a warm place, with a better heat in spring to push it on expeditiously. Kleinia repens, though a succulent, must be managed in a similar way to the Alternantheras; it is a diminutive plant, and must be got up in quantity, and planted close to produce effect—as a setting for A. amœna it is exceedingly neat; it is, however, comparatively hardy, and will winter quite well in a dry orchard or Peach house from which frost is nearly excluded. The plants may be simply packed together as they are lifted from the beds in autumn on the surface of the soil without any planting whatever, and may remain until March. Damp is their great enemy; a slight shrivelling of the foliage is of no consequence. In March they may be cut up into small pieces like Alternantheras, and placed thickly in pans or boxes in a dry heat, where they will soon make healthy plants; cuttings may also be taken off as they grow, and a little more moisture will benefit them as the days lengthen; they may be made up to May, with the certainty that the plants will be fit to go out in June. Iresines should be managed exactly like Coleuses. A cold pit is suitable after the 1st of May by husbanding the sun's heat. Among succulents whose popularity as carpet-bedding plants is now established, several of the tender sorts are propagated with the greatest facility: Echeveria metallica, in the young state, is one of the best; it should be raised from seed every season; a single plant grown under glass will yield abundance of seed; indeed, a few pods will be sufficient for thousands of seedlings. Sow in September, in pans, on a smooth surface of light sandy loam, and without any covering; dip the pan with the soil and seed gently in water until the soil is quite moistened, not allowing the seed to be covered by the water, and place the pans in a north house, with the temperature ranging about 50° at night, or in a shaded pit, covering them with a pane of clean glass. In a week the seedlings will make their appearance in abundance; the glass should not be removed for a few weeks until the little plants have gathered strength; when fit to handle they should be transplanted into other pans, $\frac{1}{2}$ in. apart, and grown near the glass in a warm house; pot them in spring, and place them in a close pit. Finely coloured clean plants, 4 in. across, will be ready by bedding time; we annually throw our old plants on the rubbish-heap in October. Sempervivum tabulæforme, a more tender plant, is raised in the same way: if a few plants run to seed in the beds in summer, unless it be very early, they should be lifted, potted, and placed in the greenhouse to ripen their seeds, and if these be sown at once in a north house, a plentiful crop of seedlings will be the result, and be fit for the flower garden by the following May, if they be grown on. Pachyphytum bracteatum is one of the most distinct and neat of tender succulents, of a pinky glaucous colour, and comes readily from seed sown as recommended for Echeveria metallica; from one spike of seed gathered from a plant in the open air, I have raised more than 1000 plants. It is slow work propagating from leaves, although larger plants can be had by this means in a shorter time than from seed, which should be sown in the autumn, just after it has ripened; winter it when young in an intermediate house, and give little or no water until the spring. Echeveria secunda glauca is hardier and more accommodating than the above, and is readily raised from seed in the same way; it varies much, however, from seed, and a careful selection should be made of the best from which to raise the stock from off-sets. It may with some risk be wintered on ashes out-of-doors, at the foot of a south wall, but the safest plan is to pack it closely on the floor of an orchard or Peach house until April, when it may be planted out where it is to remain, or on a border provisionally. The neat and distinct cherry-coloured Sempervivum triste, forming a good contrast in colour to the last-mentioned, and said to be hardy, can also be raised in quantity from seed; from a pinch sown a week ago we have the seeds germinating in hundreds, perhaps thousands. I anticipate this will be much in demand as a contrasting succulent to Echeveria glauca; it makes offsets freely, but this mode of propagation is slow compared with that of seeds. Among the many half-hardy plants used in carpet bedding, Crystal Palace Gem is undoubtedly the best among Geraniums for a yellow-foliaged plant; the stock of it having been struck in autumn, propagation may now go on by inserting the cuttings singly in small pots, and placing them in a warm pit near the glass. Small healthy plants are more useful for carpeting than larger ones; the whole stock of Geraniums may now be increased in the same way if desired. Flower of Spring and Bijou still hold a good place as white-foliaged varieties, also Mangles' variegated is indispensable. Among scarlets I know of nothing better than Charley Casbon, and Violet Hill as a flame-coloured scarlet. Calceolarias having been struck and wintered in sufficient quantity in cold pits will very shortly require to be transplanted into turf-pits, 4 in. apart, with some slight protection. The best yellow is a very old and healthy sort, called Gaines' Dwarf; I have never yet seen it go off with disease, even when aurea floribunda and such broad-leaved sorts have been well-nigh decimated. The next best yellow is Golden Gem, a dwarf kind and vigorous in habit. Rich soil and early planting in the beds, while the soil is yet cool, is the best antidote for Calceolaria disease, a hot dry planting time being always destructive to their health. Pyrethrum Golden Feather should be raised from seed every spring and grown in a cold pit in the open soil like Lettuces at the end of April; grown rapidly it makes much better plants by the carpeting time than if sown in March in heat, and nurtured on the slow principle, besides running much earlier in the season to seed. Lobelias, of all sorts, are also much better if not sown too early and grown on quickly; two weeks in May will do more for them than a month in March and April; they also are liable to become seedy too soon if forced in heat. Tagetes signata pumila also comes under the same category; it should not be sown before April; the same remarks apply to Stocks and Asters. The hardy carpet-bedding plants may now be propagated if not already done. Stellaria graminea aurea may be cut into small pieces with a little root attached, and inserted in close lines in the open ground, or cuttings may be taken and struck in heat, afterwards planted out to strengthen in a cold frame. Violas may now be broken up small and planted, or cuttings made and inserted thickly under hand-lights or in a cold frame on a slight heat, such as a bed of leaves. Those neat-growing Grasses, the Festucas, should be divided and planted in nursery lines, small plants being much neater and more easily worked than large ones. The Variegated Thyme may be similarly treated; it strikes freely at this season. All the various hardy Sempervivums, such as montanum, glaucum, arenarium, californicum, globiferum, arachnoideum, &c., should now be divided and planted out singly to strengthen before their final bedding time. The same remark also applies to such Sedums as corsicum, lividum, glaucum, acre aureum, elegans, &c. Many of the Saxifrages are exceedingly neat for carpeting—dark green, such as hypnoides, hirta, moschatum; light green, Malyi; or the many varieties with crusted foliage, like Stansfieldii, crustata, Aizoon minor. Thymus corsicus is a very neat green plant for carpeting little slopes in designs, and every fragment will grow. The pretty Antennaria tomentosa should now be separated, in order to be more easily moved in May, as it greatly dislikes being handled in hot weather. These constitute some of the most popular bedding plants belonging to the three sections to which I have alluded. W. D. C.

Planting Ranunculuses.—It may be well to remind our readers that this is the best time for planting this beautiful flower. It likes a loamy soil, and that on which some care in preparation has been bestowed is the best for the tubers. The manure should be old, well-worked, and easily incorporated with the soil; which, as regards the upper layer, should be fine, and free from stones. Plant the tubers 1½ in. deep, and 5 in. apart from each other. Press them firmly into the soil, in order to secure their position and freedom from disturbance by worms, which are their great enemies. If the soil be heavy, a little silver sand may be placed on the spot where the tubers are planted, but this is not requisite in light soils. After planting, the surface should be well raked if the weather be fine, and when dry be gently beaten with the back of a spade. As the leaves protrude through the surface, care should be taken that holes formed in this way should be stopped by placing the soil close round the collars of the plants to exclude March winds.—C. Tyso, *Wallingford.*

Lord Winmarleigh has presented a petition to Parliament from landowners and others in the manufacturing districts, praying for the amendment of the laws relating to noxious vapours. His lordship, alluding to the disastrous effect of the increased discharge of noxious vapours in destroying vegetation, stated that in some districts the woods in July presented the appearance of trees in mid-winter, and that land was being rendered gradually valueless. Great injury has already been done to nurserymen and others in certain localities, and legislation in reference to the matter is everywhere acknowledged to be greatly needed. The Duke of Richmond admitted the existence of the evil, but was not at present prepared to submit a remedy.

NOTES OF THE WEEK.

—— At the meeting of the Royal Horticultural Society, held at South Kensington, on Wednesday last, Mr. Bass exhibited a strikingly beautiful specimen of Phalænopsis Schilleriana, bearing a branched spike fully 5 ft. in height, on which we counted seventy-four fully expanded flowers of good form and substance, and brightly coloured. We have seen larger plants than this was, and spikes bearing a greater number of flowers, but we never remember to have met with this Phalænopsis in a more vigorous and healthy condition, and we hope that the Council will award it the Davis medal as suggested by the Floral Committee—a mark of distinction which it well deserves.

—— A Wellingtonia, growing in the pleasure-grounds at Dupplin Castle, in Perthshire, measures fully 48 ft. in height, and has a stem nearly 10 ft. in circumference at the base. In 1857, when it was planted, it was 3 ft. in height, and every year since it has been surface-dressed with machine-cut Grass.

—— The rare Lilium polyphyllum, hitherto only known to the majority of cultivators by the figure given of it in Royle's "Illustrations of Himalayan Plants" (plate 388), has been imported by the Colchester Bulb Company. It produces lax spikes, each of which bears from six to ten flowers of a yellow colour, spotted with vinous purple.

—— MM. de Luynes and Feil, in the "Comptes Rendus," state, in reference to the toughened glass, which has of late been attracting so much attention, that on attempting to cut it with the wheel, drill, or file, it almost invariably burst after the manner of a Rupert's drop. A disc of the toughened glass could be drilled at its centre without breaking, but it breaks if pierced at any other point.

—— A houseful of Eucharises at the Exeter Nursery is now well worth seeing. It is what is termed half-span roofed, 43 ft. in length, 14 ft. in width, and 6 ft. in height, facing the south-west, and it contains 200 plants, in 8-in. pots, of this showy Amaryllidaceous plant, each of which is now carrying four and five spikes of bloom, producing a display rarely met with at this season of the year.

—— Among Orchids more than ordinarily beautiful now in flower in London gardens, we have seen the following during the past week. In Mr. B. S. Williams' collection, at Holloway, were some strikingly fine varieties of Dendrobium Wardianum and several excellent specimens of the rare Cypripedium Dayanum. In Mr. Michael's garden at Highgate, we found a very fine form of Oncidium Weltoni, and one of the best-grown collections of Phalænopsids which we have ever seen, some forty or fifty plants of P. Schilleriana, P. amabilis, and P. grandiflora, being all at the present time in full beauty. One of the best of all Orchids for basket culture is the old Dendrobium Pierardii, which is now very effective in Messrs. Rollisson's nursery at Tooting, its pendent pseudo-bulbs being in some cases nearly a yard in length, and perfect wreaths of creamy, rosy, lilac-tipped flowers. The rare Phalænopsis Veitchii is now producing a spike in Messrs. Veitch's nursery at Chelsea, and apart from its beauty, it is interesting as a natural hybrid between P. rosea, which it most resembles in colour, and P. amabilis.

—— Mr. Max Leichtlin writes to us from Baden-Baden, as follows:—This winter has been a very severe one everywhere throughout middle Europe, and, therefore, plants out-of-doors have had a rather severe test as to their hardiness. Among others in my rock garden I had planted Cereus viridiflorus and C. phœniceus; also Opuntia humilis, missouriensis, leucospina, and others, all of which have stood a considerable amount of frost; neither snow, nor thaw and alternate freezing, have had any effect on them; they are perfectly healthy, and have already begun to assume their natural green tints. Although these Cacti are not remarkable as regards showiness, yet, when planted here and there in a rock garden, they produce a grotesque effect, and deserve to be more grown in England than they generally are. If placed at thee dge of some rock the Opuntias overhang it after a year or two; the Cereus phœniceus, which grows to a height of 5 in., has long whitish spines and small yet beautiful carmine flowers with green anthers.

—— The thirty-third Anniversary Festival in aid of the funds of the Gardeners' Royal Benevolent Institution will take place this year at the Albion Tavern, Aldersgate Street, on Friday, the 30th June, when Dr. Hogg, one of the Vice-Presidents, will take the chair.

—— M. Lavallée, the distinguished horticulturist, states that the common Water-cress and the American Water-weed do not like growing in the same places; and that if the Water-cress be introduced into a brook where the American pest is growing, the latter soon perishes.

THE FRUIT GARDEN.

RENOVATING OLD PEAR TREES.

It often occurs, in long-established kitchen gardens, that old horizontally-trained Pear trees are unfruitful, except at the points of the branches, a circumstance mainly attributable to the branches in the centre becoming covered with thick wood spurs. Root-pruning, in the case of trees with stems 10 in. and upwards in diameter, would for the most part end in failure; and if fruitfulness were induced in that way, in most cases the produce would be small and worthless. To grub up such trees, make fresh borders, and re-plant young ones, would take more time and cost more than many can afford; and, as I hope to prove, such a course is unnecessary. It is better to renovate the old trees in the following manner:—Let a commencement be made by operating on the two lowermost branches, *i.e.*, one on each side of the stem. With a small pruning chisel and mallet neatly remove from these all the old spurs, being careful not to injure more of the bark than may be necessary. Then cut off close to the main stem the next tier of branches. If this be done in winter, or before the trees start into growth in spring, in all probability the two bottom branches will throw out a quantity of young shoots, from buds that would otherwise have lain dormant. These should all be rubbed off, except such as stand a foot apart, selecting those that come from the upper side of the branch, and nailing them to the wall in a vertical position, as shown in fig. 1, which represents a tree at the end of twelve months from the commencement of the process of renovation. At this time, if any of the trees operated on be naturally weak-growing varieties, I would advise the main stem to be cut off at *a*, using a sharp saw for the purpose; cut in a sloping direction, and cap over the cut with a piece of thin sheet lead to keep out wet. In the case of strong-growing varieties, it is not advisable to cut off the main stem until the second or third year, as the young vertical shoots do not get so well ripened or furnished at the bottom with spurs as they would if the upper branches be left on for a time to take up the superabundant sap; but, when allowed to remain, it is necessary to keep the summer growths well pinched back, in order that they may not unduly rob the young upright ones. The subsequent treatment consists in keeping the latter nailed up to the wall, and, if the main stem be not cut off, in removing the old horizontal branches (as may be required) to give the young wood room, taking care also to get the wall equally furnished by encouraging the weak shoots and checking the growth of the strong ones. If all go on well, and the wall be not more than 10 or 12 ft. in height, in four or five years at most it will be furnished with bearing branches that will produce good fruit for years, and also have a fine appearance. Fig. 2 represents a tree renovated in the manner just described. Walls exceeding 12 ft. in height are more expeditiously covered by leaving two sets of horizontal branches, as in fig. 3, cutting off the spurs and training up young growths as described above. In this case it will be noticed that the vertical shoots from the upper branches have not so much space to cover as those from the lower ones. This is necessary in order to get an evenly-balanced tree, it being a well-known fact that the sap naturally flows most to the top. If the original varieties be not satisfactory, it is easy to bud or graft the vertical shoots with better sorts; and, should more than one variety be put on a tree, it is best to work the weakest growers in the centre and the strongest towards the points. I find budding the best plan to adopt, inasmuch as it can be done the first summer after commencing operations, by inserting the buds on the lowermost parts possible of the upright growths. I have put as many as 120 buds on one tree, and have seen them make growths a yard long the year after budding. In budding Pears, it is best not to remove the small portion of wood that is taken off with the bud, as many do in Rose-budding; but, with this exception, there is no difference between the two operations, and anyone who can successfully bud Roses will find no difficulty in the case of Pears. Should grafting be decided upon, cut away the main stems at *a* the first year, in order that the vertical shoots may the sooner become strong enough for the purpose. In either case it is necessary to leave more young shoots at the first thinning than are required for permanent branhces, so as to allow for some buds or grafts which may not take. At Bolton Hall, near Bedale, there is a long wall of Pear trees, all of which were cut down and grafted as just described some twelve years ago. Previous to that they seldom or never bore satisfactorily; but ever since, in favourable seasons, they have produced excellent crops of fine fruit. Some of the trees cover a space 18 or 20 yards long by 5 yards in height, and when full of fruit have a fine appearance. H. J. C.

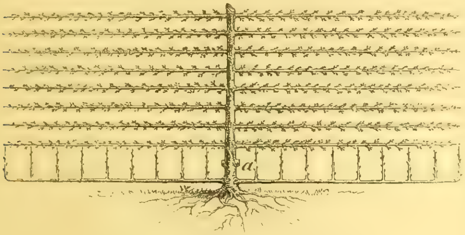


Fig. 1.—First year of the process of renovation.

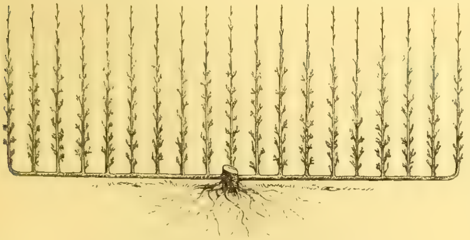


Fig. 2.—A renovated tree, four or five years old.

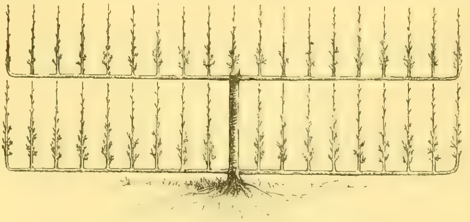


Fig. 3.—Method of covering walls more than 12 ft. high.

CULTURE OF RASPBERRIES.

Raspberries will thrive and bear fruit in almost any kind of soil that is well manured; but the finest fruit is produced by plants growing in a deep rich loam. Raspberries produce a thick mass of fibres near the surface, and therefore are very susceptible of drought, which causes the fruit to come small and shrivelled. They will, however, root deeply if encouraged to do so. Before a new plantation is made, the ground should be trenched two good spits deep, or, what is better, $2\frac{1}{2}$ ft.; but this must in some measure depend on the character of the sub-soil, as, if it be of an inferior quality, it will not be advisable to bring much of it to the surface. It must, however, be loosened up at the bottom of the trench. In the process of trenching, plenty of manure or garden refuse should be worked into the ground, so as to provide sufficient food for the young plants. The best time for planting is as soon as the canes have shed their leaves; but they may be planted with success at any time from October to the end of February, and the most suitable for the purpose are such as come from a healthy stock of moderate growth, and which can be easily pulled up without the assistance of the spade. If they have to be dug up, unless it is done with care, they often lose great quantities of roots. The mode of planting must, in some measure, be regulated by the form in which they are intended to be trained. Where stakes are available, the simplest plan is to tie the bearing canes to them, taking care that they are securely fixed in the soil. The stakes should stand out of the soil about 4½ ft., and to each of them should be tied, when the plants have become established, five or six of the strongest and best-placed canes from each stool, after the fruiting canes of the previous season have been removed. Assuming that this plan of training is adopted, they should be planted in lines not less than 5 ft. apart, and the distance asunder in the line should be the same, or not less than 4 ft. They will not throw up very strong canes the first year, but if the fruit be sacrificed, and the canes cut to within 1 ft. of the ground, they will throw up much stronger canes the following season. Another mode of training is called the hedge system. It consists in placing strong posts at each end of the row, and connecting them with galvanised wires strained through intervening iron standards. Thus a trellis is formed on which the canes are trained, and, if properly fixed, a plantation of Raspberries thus treated will last for years. Where this system is adopted, the canes should be planted about a foot apart, and the shoots should be trained a little diagonally. Some growers dispense wholly with supports; they merely place the canes in bundles, and unite the tops from each pair of stools, thus forming a series of arches on which the fruit is borne; this is, however, a plan which cannot be recommended. Some good early fruit may be obtained by planting the canes at the foot of a south wall, and training them in the form of a fan. After planting, surface-dress with decayed manure, which will exclude frost, and the rains will wash its nutritive properties to the roots. During the summer time the ground must be kept clear of weeds, and the soil occasionally loosened with the Dutch hoe. When the plants have become established, and the young canes in the growing season have made about a foot of new wood, all useless suckers should be pulled away in order to admit light and air to such canes as are selected to remain. When the fruit is gathered, the canes that have borne it should be at once cut out, so as to give increased space to those intended to bear next year's crop, and as soon as the leaves have fallen, the latter should be thinned and regulated. This cutting out of dead canes and thinning those that remain, may be done at any time before the beginning of March, but, as regards neatness and utility, it cannot be done too early. After regulating the canes, some recommend the ground to be dug and a quantity of manure to be worked in about the roots, but it is questionable whether such practice is not a mistake. A better plan is to loosen the soddened surface with a steel fork, and then to mulch with 2 or 3 in. of decayed manure, which will protect the surface roots from frost in winter and drought in summer. Of varieties, the best are Barnet, or large red; Carter's Prolific, Red Antwerp, Yellow Antwerp, and Fastolf. The Barnet produces very large fruit, of a purplish-red colour. It is larger than the Red Antwerp, but not equal to it in flavour; it is, however, an excellent variety, and a very abundant bearer. Carter's Prolific is an excellent kind, which bears large, finely-flavoured fruit. The Red and Yellow Antwerp are both so well known that they require no comment. The yellow variety will occasionally bear fruit in autumn. The Fastolf has of late years somewhat superseded the preceding varieties. It is a great bearer, and though it is a summer Raspberry, it has the desirable property of occasionally bearing fruit in the autumn superior even to that of the reputed double-bearing kinds. Several new sorts have lately been introduced, such as Prince of Wales, Semper Fidelis, and Belle de Fontenay, but of these I have had no experience. They are said to be improvements on the preceding, and the last named is a fine autumn-bearing variety. Autumn Black is perhaps more singular than useful, and is evidently the result of a cross between the Blackberry and the Raspberry. It has the rambling habit of the Bramble, with the succulency of the Raspberry and a little of the Blackberry flavour. It is said to be valuable for preserving. R.

FALLACIES IN MODERN FRUIT CULTURE.

The common fault of critics is that they go too fast or too far. Description runs into exaggeration alike in pointing out faults in existing practice and in picturing the possibilities of improved modes of culture. The paper recently read before the Society of Arts by Mr. Shirley Hibberd affords a striking instance corroborative of the above remark. This was described by a contemporary as a full tilt against the modern methods of fruit growing. That is exactly what Mr. Hibberd did; and no one, however highly gifted, can be expected to observe very closely when running at full speed. Hence, the course of culture pursued by practical pomologists was described as having for its objects the starving of the soil, the stock, and tops of trees, and, as a necessary consequence, the prevention of fruit-bearing. This result seems to have pleased our critic much, for we find it reiterated even in stronger language, thus:—"The idea that has taken firm hold of amateurs and others is that the smaller the tree the greater will be its productiveness, and the proper development of this faith is that fruit will most abound where there are no trees at all." And, I may add, that the natural rebound from such a belief, which, we infer, may have been held by Mr. Hibberd for the last quarter of a century (during which he has been proving all the best known modes of fruit tree management), is that the sturdy Oak and the graceful Beech are the models for fruit growers to study. "Nobody above the status of a lunatic practises pruning and pinching with a view to augment the production of Acorns." But what has that to do with fruit culture? No one plants Oaks for Acorns or Beech trees for their Nuts. These are grown for timber or bark; and if Apple, Pear, Plum, and other trees were also grown for furniture makers, and not for their annual produce, we should say to the root-pruner, summer-pincher, and all those bent on a starving or restrictive regimen, let the trees have their tap-roots to dig deep and run far, and their heads to spread wide and climb high; throw not away the product of a summer's sunshine at the winter pruning; the more roots, and the finer the top, the more timber; and, just because that is so, we recommend dwarfing stocks, root-pruning, and other starving processes, to hasten and augment fertility. There is less of analogy than contrast in the manufacture of timber and the production of fruit. But our critic says no! "The Oak is a fruit tree, its Acorns have a money value;" and then, to make his analogy doubly sure, adds, "an Oak tree produces Acorns, a Beech tree Beech Nuts, an Apple tree Apples; and as no one starves the two former into fertile ways, why starve Apple, Pear, and Plum trees, the fruits of which are so much more valuable, when, by leaving them alone, they are certain to bear sooner and more abundantly, and last the longer?" And, further on, we are told man can do but little to hasten or augment fertility. Of course, if our critic seriously believes all this, he must advocate the unrestricted growth of all fruit trees, and that is virtually what he does. "Start with the ugliest trees you can find"—there may be a great deal more in this advice than is readily apparent—"select good varieties, choose the best soil, and leave the climate and Nature, assisted by a few weights on the stronger branches to allure them into fruit-bearing by make-believe crops, to do all the rest." Well, no doubt, for the culture of fruits in orchards, the plan of free and natural growth has its merits; and had Mr. Shirley Hibberd advocated it for that purpose, without caricaturing the most interesting, successful, and profitable methods of restrictive fruit culture in gardens, his paper would not have evoked the adverse criticisms passed upon it. But not only has our critic run wild in his analogies, but gone far astray in his statement of facts. Instead of doing little to hasten or augment production, the modern pomologist urges fertility on, and keeps it almost abreast of growth. Trees bearing fruit within a year of being grafted are now by no means uncommon, and fairly good crops are gathered within two or three years. The fact is, modern pomologists have attempted a match against time and space, and they have mastered both, by growing far more fruit of higher quality in less time, within less space, than was ever done or dreamt of under the old-fashioned system of fruit growing, to which Mr. Hibberd would have us hie back. No! we have seen the beauty and productiveness of restrictive training, and, as far as the garden is concerned, we mean to abide by it, as regards pyramids, bushes, and cordons of all sorts. But then we do not amputate the roots to starve our trees, and, where they show a little vigour, stop them again to throw them back into their former state of starvation. On the contrary, we root-prune our trees, perhaps once or twice in twenty years, to multiply the number and improve the quality of their roots, so that they may be able to provide the trees with better nutriment. The result is no fishing-rods to waste a summer's sunshine, whether cut away or allured years after into fruit-bearing by pulley-pruning (an expedient by no means novel), but wood of moderate strength, bristling with flower-buds. The starving stock also has its important mission in hastening and augmenting production. As Mr. Tillery so well points out (see p. 182), the roots of such stocks are different, and keep nearer the surface, not to starve, however, but to supply the tree with more fertile food. These stocks have proved the greatest boon to the modern pomologist; they enable him to gather more fruit, and of better quality, within the compass of a few yards of a mere line of cordons than were often found on the great orchard trees of bygone times, to which we are now urged to return. As to top-pinching, no doubt a few zealots may have carried it to excess. Mr. Hibberd may, however, be surprised when we inform him that we have Apple cordons four years old on the true Doucin stock that have neither been pruned nor pinched. Each year the fruit hangs like ropes of Onions, and if that does not perpetuate fertility, then assuredly pulley-pruning is a fallacy and a delusion. As to other trees, a single stopping in June is generally all they require, and we have yet to discover that the practice starves the trees. We know, on the contrary, that it diverts vital force into fruitfulness—an object which is highly valued by most fruit-growers. Mr. Hibberd will hardly realize, perhaps, that modern fruit culture is almost the opposite of what he has represented it to be. It may be defined as a means of obtaining the most fruit with the least interference, and without any loss of time, vital force, or space. There is less hacking of branches, less root-chopping than formerly. Fertility, once established, reproduces and perpetuates itself; and as "nothing succeeds like success," so the surest recipe for continuous fertility is an annual crop. When trees are once moulded into such habits—and root-pruning and dwarfing stocks, and even top-pinching, may have much to do in this moulding—a masterly inactivity is the highest art of the cultivator. His business is not to starve but to fortify the trees, and lighten their load of fruit so as to adapt the weight of the crop to their ability to support it. Thus, instead of a system of chopping and starving, as represented by our critic, fruit culture is a wise means of nurturing and feeding fruit trees with skill so that the greater portion of the growing power shall be expended in promoting their necessary healthy development, and in the production of the best quality of fruit on the most limited area. Keeping the above in view, and abundantly feeding small fruit trees with liquid and solid top-dressings when required, they far exceed tall orchard trees in beauty and productiveness.

D. T. Fish.

Mr. Shirley Hibberd's plan of tying stones to the branches of fruit trees is essentially that of a non-practical man. He asserts that he adopted it many years ago, but that he has kept the secret till now. It would be interesting to know how far he has really tried his hand at the practice, and with what actual results. The figure of a Pear tree trained in this way, which lately appeared in the pages of a contemporary, is incorrect, so far as the "pulleys" are concerned, for a tree similar to that represented must have required at least ½ cwt. of brickbats to bring it into shape. The conclusion is, therefore, irresistible that Mr. Hibberd's model tree is a mere fanciful sketch, having no foundation in fact. To test the matter practically I attached some pieces of brick to the moderately-strong shoots of an Apple tree grafted on the Paradise stock, hanging them on about the base of the last year's shoots, exactly as Mr. Hibberd has shown, and I found that they required to be above 1½ lb. in weight to bring the branches down to nearly a horizontal position; what weight, therefore, strong shoots, such as trees on the free stock make, would require, your readers may guess. It may, I think, be safely predicted that Mr. Shirley Hibberd's notable disquisition on fruit trees will not move a single "dwarf stock" from its place anywhere; and as for the "pulley system" of pruning, it will speedily effect its own cure wherever it is tried. Since writing the above we have had a gale of wind here, and we hung the bricks on again—half-bricks are best, as being angular they do not slip out of the string, and are just about the right weight for small trees—and it is impossible to convey any idea of the clashing which they made as they swayed about in the storm, grinding the bark off the shoots, knocking off the fruit-buds, and almost threatening to rend the branches out of their sockets.

S. W.

In reference to my remarks last week (see p. 202), allow me to say that any one who reads attentively what I stated respecting fruit growing in orchard houses will see that I did not utter a word against that system, so long as the trees are of a size to bear anything commensurate with the cost of production. My strictures were unmistakably directed against little trees in pots. I am aware that Mr. Grieve, Mr. Tillery, Mr. Douglas, Mr. Wilson, and Mr. Pearson all grow fruit trees in pots, and with the best results, and I am also acquainted with others who adopt the same practice, and carry it out with equal success; but all this does not stamp the practice as sound, or, in other words, that as great a quantity of good fruit can be grown by it at the same expenditure of labour and material as with larger trees. I merely alluded to the pot culture of little fruit trees as the opposite extreme to Mr. Hibberd's exclusive advocacy of unrestricted growth; and, like all other extremes, I maintain that both are mistakes. I have so much faith in conclusions based upon actual experience, and so little in such as are arrived at without it, that I make it a point never to offer an opinion upon anything connected with gardening matters that I have not tested. Like others, a number of years ago I practised the little-pot culture of Peaches, Nectarines, Plums, and Cherries; the fruit produced was of good quality, and as abundant as the size of the trees would permit, but the labour was just double that which is incurred when the trees are planted out, and the weight of fruit was less. My trees very soon got into pots above the orthodox size; I was then so far satisfied with the results that I have not seen anything in their way better, but they in no way equalled trees that were planted out, so far as the production of the maximum of fruit with a minimum of labour was concerned. Despite all that has ever been advanced by the most determined advocates of this method of fruit culture, it is something like taking a circuitous route to get at a given object instead of walking straight to it. The only advantage I ever could find in it was in being able to slightly prolong the Peach season by retarding the trees in spring, which the ability to move them out of the sun's influence afforded.

T. Baines.

WARTS ON VINE LEAVES.

During the early spring months warts often form a serious impediment to the growth of many Vines. They are generally most abundant on young Vines—older ones have more power to resist their attacks—but all are, more or less, subject to them. When very plentiful their effects are visible throughout the whole season. Vines pushed into growth in January, February, and March are more liable to be attacked than those started later in the season. The undersides of the leaves become covered with small rough protuberances, about the same colour as that of the leaf, but sometimes paler. They vary in size, but are usually not larger than a pin's head. In some cases there are only one or two on a leaf, while on others they abound to such an extent that the leaf ceases to expand, curls up, and assumes an unhealthy appearance somewhat like that of leaves covered with green fly. Some leaves grow to a considerable size before the warts appear, and, where this is the case, the latter do not check the growth to the same extent as when the leaves are affected before they are half developed, and when this happens, no after care or treatment will remove the excrescences. A high temperature, and a close, stagnant, excessively moist atmosphere favour their growth to a great extent, and these are conditions common in spring in many structures in which Vines are grown. The amount of moisture should be in proportion to that of the heat—an important matter, the non-observance of which, especially during damp, dull weather, when the ventilators cannot be opened to any great extent to admit a free circulation of air, is almost sure to induce warts. If moisture were cautiously dealt with at such a time, fewer evils would be the result.

J. Muir.

FORCING PEACHES AND NECTARINES.

There are certain facts connected with forcing that cannot be too much impressed upon those who have to do with the practice, and among the most important are those relating to temperature. For example, there is perhaps no more fertile course of failure in the forcing of a great number of fruits and flowers than too high a temperature at certain stages of growth. Let us take the Peach and Nectarine. Every cultivator knows that well-ripened wood and fruit-buds are essential to success; yet all may be ruined at the outset. Let any one introduce a healthy, well-matured Peach tree, in a pot, into a pine stove, or vinery temperature, and no matter how forward the buds may be, or how plump and well-matured, leaves only will be produced, and few or none of the flowers will ever expand at all. We have tried such an experiment, and have often noticed the effect of such treatment in other cases. In some of our Peach houses the lower branches of the trees are unavoidably very near the hot-water pipes, and these branches would push annually into leaf without flowering, were the leaf-buds not pinched close back as fast as they grew till the flowers are expanded. Ill-ripened shoots are most liable to push into leaf first, but in all cases it will be found a safe and excellent plan to pinch the leaf-buds as soon as they can be laid hold of by the finger-nails. Under healthy conditions the Peach is always in flower before the leaves are out; when both push contemporaneously it is a bad sign, but one which is seldom seen except indoors, and under artificial treatment. In forcing the Peach during the earlier stages, the most favourable conditions are bright sunny days, no matter how frosty. At such times the temperature may be run up with perfect safety to 85° with air, even when the trees are just in flower, provided the temperature drops at night to a low figure, say 40° or even 35°, and the bad practice of steaming the houses at night is avoided. It is the dull weather which tries the skill of the practitioner; then the temperature must, under all circumstances, be run up by fire-heat to 55° or 60°, at least, during the day; and it should not fall below 50° at night, if for no other reason than that of getting up heat early in the morning with the light. No moisture should be given except bedewing the flowers about every other day and early in the afternoon with the syringe, to facilitate the setting process; but continual saturation must be shunned. This year our early trees hardly experienced one blink of sunshine during the whole time they were in flower, a leaden snowy sky prevailing all the time; but under the above treatment both Peaches and Nectarines have set their fruit in clusters. J. S.

The French Paradise Stock.—Mr. Baines cautions us against using this stock indiscriminately upon all soils. I have never observed that any one recommended it as fitted for such work, but, on the contrary, it has been frequently said of late years that it is most suited for strong and wet soils, where the Crab stock is most objectionable. The fact that Mr. Baines saw the French Paradise cultivated forty-five years ago does not make it the less true that this peculiarly distinct stock was condemned by our leading pomologists as tender and useless except for dry soils, &c.; but an acquaintanceship commenced so long ago ought to have saved Mr. Baines from confounding the Paradise with the Doucin stock, as he does (see p. 203). These stocks are quite distinct both in character and in their effect on the varieties grafted on them.—W. T.

D'Arcy Spice Pippin.—This excellent Apple, when ripe, has a yellowish green skin, almost obscured by brownish russet, especially on the sunny side, where it is also tinted with deep shining orange scarlet, the whole thinly strewed with dark russety dots. Its flesh is rich, crisp, juicy, and aromatic, with a honied sweetness and delicious aroma. Some one called it Spring Ribston, and Mr. Harris, of Little Baddow, near Chelmsford, re-named it Baddow Pippin. Mr. Harris, however, ought to have known its true name, as it has been cultivated about Talleshunt d'Arcy above one hundred years. Dealers from Chelmsford used to go annually to d'Arcy for this Apple, which was much prized, and met with a ready sale. When I first saw the fruit of this Apple I believed it to be that of Reinette du Canada, which it much resembles in shape and colour; but on comparing the trees I found that they were quite different.—John Scott, *Merriott, Crewkerne.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Beurre Sterckmans Pear.—This Pear, which, at this late season, is good in all respects, is not so well known as it deserves to be. It is of medium size, with a dullish-red skin, and a melting, sugary, rich flesh. The tree is a profuse bearer on either the Quince or Pear stocks.—W. W. H.

The Earliest Figs.—Intending to pursue Fig culture on a somewhat extensive scale, I shall be greatly obliged by any of your correspondents telling me which are the best among the early kinds, particularly among the new and fine kinds of which we have heard so much. –K. S.

Fruit Prospects for 1876.—The prospects of a good fruit crop are at present very satisfactory, the trees being full of flower-buds. Equally important, too, is the fact that we may now expect a somewhat late season of flowering, which, in our fickle climate, is a circumstance much to be desired.—J. G.

The Best White Grapes.—To Mr. Newton's interesting list of White Grapes (see p. 180), allow me to add the Trebbiano, a kind with which I am so delighted that two years ago I planted a house with it. Our great month for Grapes here is January, and Trebbiano does really good service at that time. It is not a Muscat in flavour, nor a Gros Colman in size, but, when grown in heat, its colour is fine, and the flavour refreshing.—R. Gilbert, *Burghley.*

Best Vines for an Unheated Orchard-house.—The Esperione and the Royal Muscadine are two excellent varieties for a cold house, and two which are easily managed. They will ripen under glass without heat during any season, and so much can hardly be said of any other variety, except, perhaps the Black Cluster, which is hardly worth a place under glass. The Esperione, when well grown, is little inferior to the Black Hamburgh, which will sometimes, but not always, ripen well in an unheated orchard-house.—P. G.

THE INDOOR GARDEN.

CULTURE OF APHELANDRAS.

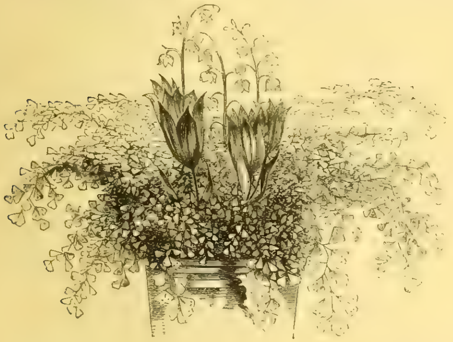
Aphelandra cristata, when well managed, is still one of the most beautiful autumn ornaments of the warm conservatory which we possess. It succeeds in either peat or loam; in the former its leaves grow to a larger size and assume a deeper shade of green than they do in loam which produces shorter growth, and generally flowers a little deeper in colour. After trying the plant in peat and also in loam, as well as in a mixture of equal parts of each, I have found that the latter is preferable used in equal proportions; both should contain a fair amount of fibre and have added to them one-seventh of sand. Cuttings strike readily when taken off with a heel, and placed singly in 60-sized pots in a mixture of half-sifted peat and sand, with a little clean sand on the top; give a little water when they are inserted, and at once put them under a propagating glass in a temperature of 70°. They should be put in as early in the season as they can be had in proper condition, which will be when the young growths are about 3 or 4 in. in length. This they will have attained by the middle of April, provided the plants from which they are taken have been kept in a warm house through the winter. Keep them sufficiently close to prevent their flagging, but not so as to cause the leaves to damp—a condition from which they are likely to suffer if a little air be not given. By the end of May enough roots will be formed to admit of the propagating glass being dispensed with. They should then be moved into 6-inch pots. For this first shift the soil should be sifted and used, as already advised, in equal proportions of loam and peat. They will grow quicker if a sixth part be added, consisting of half leaf-mould and rotten manure, with as much sand mixed with the whole as will keep it porous. Pot moderately firm, and place the plants on a front shelf, where they will get plenty of light, in a house or pit, with a night temperature of 75°, allowing it to rise 10° higher with air during the day. Shade in the middle of the day in sunny weather, and give enough water to keep the soil moderately moist. Pinch out the points of the shoots as soon as growth has fairly commenced. This Aphelandra, being of a somewhat erect habit of growth, is disposed to run up without branching out, unless stopping the shoots is attended to. Syringe overhead in the afternoons, and close the house while the sun is upon the glass; by the middle of July the young plants will have made sufficient progress to bear moving into pots 2 in. larger, now using the soil in a more lumpy state, but in similar proportions as before. Again pinch out the points of the shoots, and treat as hitherto in respect to heat, shade, and moisture, both at the roots and by syringing overhead, keeping the atmosphere all through the growing season moderately moist. About the end of August discontinue the use of the syringe, and give more air, and as the weather gets cooler reduce the temperature 5°. They will now begin to throw up flowers, and should be set in the lightest place which the house affords. When the bloom-spikes are half open, the plants, if required, may be placed in a conservatory kept at an intermediate temperature. Should it not be warmer than an ordinary greenhouse, they must be allowed to remain in the stove, as they would not stand keeping too cold during the autumn. If whilst in bloom they are subjected to a somewhat lower temperature than that in which they opened, no more water must be given than will keep the leaves and flowers from flagging, or the roots will be apt to suffer. As soon as the blooms have decayed, the shoots should be cut back to within a couple of joints of where they were shortened at the second stopping in the summer. Keep the plants through the winter in a temperature of 60° in the night and a few degrees warmer in the day; give no more water than is necessary to keep them growing slowly. As the days lengthen give 5° more warmth by day and night. By the end of March the roots will begin to move; they should then be turned out of the pots, and as much of the surface-soil as is not occupied by them ought to be removed. Give a three or four inch shift according to the quantity of roots they have got, using the soil in a little rougher state than when the plants were smaller.

When the potting is completed replace them in the stove, treating them generally as in the preceding summer, except that they will only require stopping once, unless it is deemed advisable to have some in flower late in the autumn. About the beginning of May pinch out the points and tie the shoots out in an horizontal position, so as to induce a bushy form. This will also cause some of the lower eyes to break and produce more flowering growths. The plants require very little support, but a few neat sticks should be used to keep the shoots in their places. Treat them through the summer as during the first season. If only stopped once they will flower considerably earlier than they otherwise would do; when the bloom is over, again shorten back the whole of the shoots to a couple of eyes beyond the point to which they were cut back the autumn before; treat them similarly through the winter. In the spring again turn them out of the pots, and remove as much of the old soil as can be done without unduly disturbing the roots; re-pot in 2 or 3 in. larger size, which, unless very large specimens are required, will be found big enough to grow the plants in for a number of years, provided a portion of the old soil is replaced by new as hitherto in the spring, in addition to a liberal use of manure-water through the growing season. Thus managed, Aphelandras will last in good condition for years. T. Baines.

POT BOUQUETS.

The culture of plants in pots for room decoration has greatly increased within the last few years, and very large sums are annually expended in Covent Garden alone for the pretty little plants in pots now so often seen in the window casements and apartments of town mansions. Our illustration shows quite a bouquet-like arrangement, consisting of crimson Tulips and Lilies-of-the-Valley, neatly fringed with Maidenhair Fern, an arrangement, we believe, first adopted by Mr. Herbst, of Richmond. Potfuls of Snowdrops may also be seen tastefully fringed with Fern and blue Scillas. Many other spring-flowering bulbs might likewise be associated with Ferns or other handsome-leaved plants with advantage. Sometimes mixtures of bulbs are planted in zinc trays, or rather pans, which are set in shallow wicker baskets and covered with Moss, through which the bulbs grow, and, when in flower, have a handsome appearance.

B.



A Pot Bouquet.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

The Cocoanut in Florida.—The culture of Cocoanuts is to become an industry in Florida. The climate is adapted to them, and it is thought their culture will be profitable. The trees can be planted about the distance apart that Apple trees are usually set, and they are much longer lived than Apple trees.

Wintering Alternantheras.—We find no difficulty in wintering old plants of these after lifting them. We put them into pots that will just hold their roots, using free, porous soil, and place them on a dry airy shelf in a house where the temperature is never below 55°. Too much moisture must not be maintained during the short days. We have a lot now, which will soon be broken up, and every plant will give us, at least, seven good plants, besides a crop of cuttings soon.—A. H., *Thoresby*.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Indoor Plants.—Mignonette that is flowering in pots should be regularly supplied with manure-water; when this is given continuously from the time the plants show bloom, not only will they continue to flower much longer, but the leaves will have that dark green healthy hue that indicates liberal treatment; whereas, when Mignonette is grown without sufficient sustenance, it assumes a sickly yellow appearance. Herbaceous Calceolarias should also be well fed with manure-water, and if the latest-sown plants be not already in their blooming pots, they should be put in them at once, as, if this be deferred until the roots get stunted, they will be little benefited by subsequent shifting. Cinerarias should have liquid manure alternately with water; indeed, if not given too strong, they will be none the worse for manure-water only. Pelargoniums will now require more water; keep them well tied out, near the glass, and do not overcrowd the plants; it is better to grow a score with abundance of room than double the number with insufficient space, as the former will not only be much more satisfactory in appearance, but will produce more flowers. Cyclamens, now flowering, must be kept well up to the light, otherwise their bloom-stems become weak and liable to damp.

Pits and Frames.—As soon as the heat has sufficiently subsided in Cucumber beds, which will be (according to their size) in a fortnight or a few days more from the time they are made, the soil should be put on. It is often safer for amateurs to test the heat with a thermometer than to trust to the more recognized method of being guided by the customary stick being inserted in the middle of the bed, as without some experience they are liable to err in either putting in the soil before the heat has got sufficiently low, or deferring it until the heat is too much reduced. There are instruments made expressly for the purpose of showing the temperature of beds composed of either tan or other fermenting materials, but such not being at hand, an ordinary thermometer will answer the purpose, plunging it well down in the centre, which will be the warmest place. As soon as the temperature has fallen to 80°, the soil may be put in; but where the bed is large, especially in depth, sometimes the heat will again rise to such an extent as to injure the young plants, which will quickly make their appearance after the seeds are put in. The soil should be laid evenly over the surface of the bed to a depth of 6 in.; if less, the rank steam from the manure will sometimes destroy the plants. Sow the seeds singly in small pots half-filled with fine soil, mixed with a little decomposed manure or leaf-mould with some fibrous material in the bottom, which will be sufficient drainage, and need not be disturbed when the plants are potted on; cover the seeds with ½ in. of soil, and plunge the pots; in six or eight days the seeds will germinate, and when they are 3 in. above the soil, fill up the pots with earth, into which they will emit roots all up the stem, which will much strengthen the plants. Cuttings of Fuchsias, bedding plants, &c., that will root in heat may also be struck in the same bed, but with all subjects of this description it is necessary to be very careful that they are free from aphides or any other insect, as, if there be any trace of these pests, the warmth will speedily bring them into active life, in which case they will fasten on the Cucumbers, from which, on account of their tender nature at this early season, they are very difficult to eradicate without great risk of injury to the plants. Where cuttings are put in a Cucumber-frame I should advise always the precautionary measure being taken of dipping them in tobacco-water before they are put in, whether there are any insects perceptible or not. At first, whilst the bed is very warm, it will most likely be necessary to leave the lights tilted about an eighth of an inch at the back during the night, securing a mat down over it; the lights should be covered with double mats, fastening them well down over the sides; it will also be advisable to put some litter, a foot or so in thickness, all round the sides of the bed, bringing it well up the sides of the frame, or, if this be not obtainable, thin boards nailed together in the form of shutters will assist in preserving the heat much longer. Beds that have been made up for Potatoes should have 9 in. of soil put on them at once and the Potatoes dibbled in, covering them about 4 in.; when several inches in height add a little more soil. Potatoes that have been prepared as advised some weeks ago by placing them thinly to sprout will now be fit for beds of this description; put them in rows 14 in. apart, and 9 in. or 10 in. between each plant in the rows. A thin row of Radish seed may be sown betwixt each row of Potatoes, which will come in so as to be used before the Potatoes require the remaining soil to be added. Care must be taken that the Potatoes are not planted whilst there is too much heat in the bed, or they will be destroyed, or so injured as to be unfit for use. 60° of heat in the soil is quite enough. Similar beds intended for Carrots should have 9 in. or 10 in. of earth put in. This ought to be of a moderately-fine description, such as has been used for Cucumbers or Melons the year preceding. Sow the Carrots at once in rows 8 in. apart. Dahlia roots for producing cuttings should now be started in beds similar in strength to those for Potatoes, or, where the frame room is limited, a corner of the Potato frame may be apportioned to the Dahlias, which will do much better than when subjected to greater heat; as, when the roots are too warm, they throw up shoots soft and weak that do not make such vigorous plants as when grown slower.

Roses.—As regards the best time to prune Roses there are several things to be considered; in low, damp situations where spring frosts are much more severe than upon high and dry ground, it is a mistake to prune so early as to endanger the first shoots, as, when this happens, the second efforts which the plants make are always weak, and result in a poor display of flowers; neither is it well for those who have only a few Roses to run any risk by early pruning. Those who have a considerable number will do well to prune a portion at different times—say, some at the beginning of March, another portion ten days later, and another at a similar interval; not only are the chances of fine flowers increased by this, but there will be a longer succession of bloom. It is not advisable for amateurs who grow Roses in great quantities to prune so closely as those who require only a few fine flowers for showing; at the same time it is well to cut out all weak shoots, as nothing is gained by allowing the plants to become crowded.

Potatoes.—To succeed the hot-bed grown Potatoes, or, where the means of growing them in a hot-bed do not exist, they may be planted in a cold frame; this can be either an ordinary garden frame, or a light one made of boards, or, where fibrous material is plentiful, a turf-pit may be made at little cost, cutting the turf in strips 1 ft. wide and 3 or 4 in. thick, forming the sides and ends of the pit similarly as with bricks; lay the Grassy side downwards to a depth of 15 in. at the back and 10 in. in front, surmounting all with boards nearly the width of the turf walls and 1 in. in thickness, nailed together at the corners, with cross-strips of board 6 in. wide to carry the lights or shutters; if straw or ordinary bast mats be used, the strips will require to be slighter and more numerous. A turf-pit of this description may be turned to many purposes after the Potatoes are cleared out. These cold frames or pits should occupy a sunny situation, and if the ground does not naturally slope to the south it should be made to do so, so that they may get all the sun possible. The southern side of a wall should have a row of early Potatoes planted at about 6 in. distance from it; when aboveground, they can be easily protected with a light board reared in front of them when there is danger of frost, and will, so managed, be fit for use a fortnight or three weeks before those in the open ground. Should the land be very wet, it is better, even if the time have arrived for sowing or planting, to delay slightly than to tread the ground when in such a state, as it never works kindly, and seeds sown in too moist a soil rarely do well. Except in very dry situations it will be necessary to keep this in view during the present spring, owing to the more than average rainfall of the past autumn and winter.

Seakale.—As soon as the soil is sufficiently dry, Seakale should be planted, as, upon getting it in early so as to give it a long season of growth, depends in a great measure the size and strength it will attain before autumn. The whipthong-like roots advised to be saved when taking up last year's plants for forcing are the best to start with. The stronger the pieces that are used for planting the better usually the crowns will be that are grown from them. If sufficient pieces can be obtained as thick as one's finger, and from 6 to 9 in. long, they are to be preferred to smaller pieces, but where there is a deficiency of these large roots, some of a smaller size will answer. If the ground has been prepared as advised a short time ago, the holes may now be made with a dibble, just leaving the top of the piece level with the surface of the soil, filling the holes up as the roots are put in. Plant them 15 in. apart every way; where there is no stint of ground 18 in. will be preferable. Should these roots not be obtainable, pieces of the crowns that have been forced may be planted, but they are not so good as the roots. When this crop has to be grown from seed, the ground, if not already prepared, should be at once got ready by manuring and digging, as it ought to be sown during this month. Where there is a superabundance of this vegetable, cover the crowns at once with 8 or 10 in. of old tan, sand, or fine ashes, and they will produce excellent Kale, cutting it for use before it has grown through the covering material; a slight washing will leave it as clean and white as possible.

Rhubarb and **Celery** should now be planted; Rhubarb in a piece of very rich ground. If the land be of such a nature as to admit of its being trenched 3 ft. deep, putting 3 in. of well decayed manure in the bottom, and not stinting the upper portion, the beds will last for years, mulching annually; with the ground thus well prepared, not more than half the space need be occupied to produce a given quantity as when the land is poor and insufficiently manured. Celery should at once be sown in pans, covering the seeds with a fourth of an inch of soil, and placing them in either a hot-bed that is at work, or in a house where there is heat; if not, in a cold frame, but, in the latter case, it will not be ready for use so early.

Greenhouse Plants.

Keep Cactuses, Echeverias, Kalosanthes, and plants of that class on light shelves well up to the glass. Any of the latter that are leggy, or not likely to bloom satisfactorily, should at once be cut down, leaving about 3 in. of the young stem to break again. The strongest shoots, if formed into cuttings and inserted in sandy soil, will soon strike root, and make useful little flowering plants in small-sized pots. Where there are surplus plants to admit of a few being treated as above at this early season, the foundation is laid for forming good specimens to come in next year. It is almost necessary to treat a portion of the stock in this way, as the plants do not form growth in time to flower if they are not cut back till July. Such as were pruned in at that time last year, and are now too crowded with young shoots, should have the weakest thinned out, and the others tied and regulated if found to require support.

Chrysanthemums.—Cuttings of these put in now will develop themselves sufficiently for ordinary purposes if liberally treated, without which they will scarcely deserve house-room when the flowering period arrives. These strike best in cold frames, where they can be kept close and moist, or, if placed in heat, it should only be very slight. Those already struck should be potted and placed in a close pit or frame to give them a start, after which they must be shifted on as soon as the roots reach the sides of the pots they are in, so that they may be kept growing freely without check till they are placed in the pots in which they are intended to bloom. The soil can scarcely be too rich for them, as they are very gross feeders, but the manure added should not be of a rank nature. Cow manure, that has been laid up in a dry place for a year or so, is the best for this purpose; but, failing this, such as can be obtained from old hot-beds, if in a thoroughly decomposed state, may be used in its place.

Cyclamens.—The easy way in which these may be raised from seed, and the rapidity with which they may be grown to a flowering size, together with the effect they produce at a dull season of the year, place Cyclamens in the front rank of winter decorative plants. To get bulbs for next season that will bloom, seed can scarcely be sown too soon. A light vegetable soil, such as peat or leaf-mould, is best suited for their growth. As the seeds are large, they should be covered with half an inch of sandy soil; and to assist them to germinate quickly, they should be placed in a strong moist heat, and, when up, be pushed forward till the time arrives for hardening them off to plant out in prepared beds in the open air.

Hard-wooded Plants.—As early-flowering Heaths go out of bloom they should be removed to a position where they can be kept somewhat close and moist, and be syringed overhead, so as to assist them to break and make free growth. Keep the balls only just moist, for which little beyond the syringing will be necessary, as with a reduced top, and no growth till they start again, very little water will be taken up for some time to come. As Epacrises fade, cut away the old flowering wood to within a couple of inches of its origin, and treat the plants in every way as above advised for Heaths. Azaleas may be forwarded by keeping the house closed, and the plants damped overhead by an occasional syringing. Where any of these are out of health through having been confined to the same sized pots, or from improper watering that has rendered the soil sour and destroyed the young feeding roots, they should be looked to at once. In the latter case, the old ball should be considerably reduced by picking it away with a sharp-pointed tool, or by cutting as much as possible off with a sharp knife without injuring the large main roots. In most cases the ball may be decreased sufficiently for the plant to be potted in the same sized pot as the one it had been previously growing in, when by giving it some thoroughly good fresh fibry peat with the proper proportion of sand, followed by judicious watering, any sickly plant may be easily got into health again. It sometimes occurs that Azaleas, and plants of that class, have to be confined to certain sized pots for some special purpose, and, after being pinched, get out of condition. An inch or so sliced off equally round the ball, to be replaced with good fresh peat, will soon add to their strength and vigour. In cases where it is thought desirable to treat plants in this way, it should be set about at once, so as to afford them time to make fresh fibres before any young growth takes place. If the operation be deferred till then, the check would be too great for the young tender shoots, which would, in all probability flag and suffer injury. After re-potting as above, place the plants in a house that can be kept close and warm without the aid of fire-heat. Syringe frequently but lightly overhead, so as not to wet the new soil, which must only be kept just moist until the roots get a good hold of it.

Pelargoniums of both fancy and show varieties will now require careful watching to keep them free from green fly, which at this season increase at a rapid rate and soon cripple the plants. To dislodge them, burn tobacco paper on a wet evening, when little or no wind is stirring, and the laps of the glass are filled up by the rain, as then the smoke cannot effect its escape, and much less suffices for their destruction. Repeat the fumigation early the following morning to prevent stragglers from recovering. If the house can remain closed for the day, the fumigation will be much more effectual, as fresh air revives any of the aphides not actually killed. Pot on young healthy-growing plants that were struck last season as soon as the roots reach the sides of the pots they are in, using for the purpose good stiff fibry yellow loam, and pressing the same well into the pots. Older plants intended to bloom early should be got into their flowering pots at once, using the same kind of soil, which should be made as firm as possible. Regulate and tie out the shoots as they require it, so as to admit light and air to the under leaves, for when these are defective, the beauty of the plants is materially affected. Keep them well up to the light in a sunny position, and close early in the afternoons of warm bright days, giving the plants a syringing at the same time, which will greatly assist their growth. The fancy kinds will stand and enjoy 10° or 15° more heat than the large show varieties, and may therefore be placed in the warmest positions or in separate houses.

Herbaceous Calceolarias and Cinerarias.—These rank among the most attractive of greenhouse plants. Pot the Calceolarias in soil, consisting of about two parts fibry loam to one of spent hot-bed manure or leaf-soil. Keep the atmosphere of the house or pit in which they are growing as moist as possible, with a night temperature of from 45° to 50°. Never allow them to become pot-bound till they are placed in the sizes required for blooming. Watch for the appearance of green fly, and smoke the plants very cautiously, as they are easily injured, especially if the leaves be at all damp. The shrubby varieties, such as Sultan and aurea floribunda, are likewise valuable for pots, and may be grown and treated much in the same way as the herbaceous varieties. Cinerarias that have filled their pots with roots, and are now beginning to show flower, should be assisted with liberal supplies of manure-water; if well furnished with good healthy foliage, and in moderate-sized pots, they can scarcely be overdone, unless it is given to them too strong. A tablespoonful of guano is quite sufficient for four gallons of water, at which strength it may be applied to these and most other soft-wooded plants after they have satisfactorily filled their pots. Pot on those for late blooming, using a light, rich soil for the purpose. Keep them in pits or frames on a cool, damp bottom, such as cinder ashes. Syringe well overhead, and close early in the afternoon, while the sun is on them, to promote free growth.

Fuchsias.—Old plants, to flower early, must now be pushed on in some of the forcing houses, where they can enjoy a steady moist heat congenial to their natures. Shake out and re-pot such as have broken, and stop any strong shoots of others that are in a more advanced stage, and appear to be taking the lead. Young plants must be kept growing on in a light position, where they can have the benefit of frequent syringings and a good growing heat. Stop the leading shoots when the plants have attained about the height of a foot. This will induce them to break back, and furnish themselves with branches down to the pot, so as to make well-formed pyramids, which shape is the most pleasing and suitable to show off their pendulous flowers. As soon as the top buds start again, select the best situated to train on as leaders to increase the height and size of the plants. Cuttings made from the young soft wood may still be put in to form good plants for autumn blooming, also for wintering to be grown on for early work. Fuchsias delight in a rich loose soil, such as loam, with a liberal admixture of old Mushroom refuse, or spent hot-bed manure.—J. Sheppard, *Woolverstone Park.*

Floral Decorations.

The accompanying list of flowers and fruits, suitable for vases, and procurable in March, gives evidence of the approach of spring. Siberian Squills, which have hitherto been obtained from pots under glass, are now to be found displaying their intensely blue flowers in the open borders. Hepaticas, too, which are not half so much grown as they deserve to be, and which keep fresh in water for a longer time than most flowers, are now favouring us with their lovely blossoms. The blue variety runs so closely into the confines of lavender colour, that it is doubtful whether it ought not to be grouped with Heliotrope and other flowers, under the heading of pale purple; but the bright, rosy, pink sort presents no such difficulty in colour-classification. The double varieties, being much more dwarf, are not so useful for decorative purposes generally, though they are very suitable for "pincushion" arrangements. Aucuba berries are worthy of more attention than they usually receive for decoration; they are now fully ripe, and of a very rich scarlet colour; and if any objection be raised to cutting the shrubs, the berries can easily be picked, and mounted on the points of separate wires, and the wires can be grouped and twisted together so naturally in clusters, that only the closest observation would detect the arrangement. Solanum berries, which also grow upright, may be similarly treated; and if the wires should show, a little long Moss tied among them will effectually hide them. Arbutus berries, which hang down, and which would have an unnatural appearance if they were mounted in this way, do not require it, since the clusters in which they grow can be removed without injury to the tree. Primroses and Polyanthus are now opening in many shades of yellow and crimson. A few days back, Mr. Dickson, of Covent Garden, was good enough to send me some pieces of Guelder Rose, forced in Paris, which proved a useful addition to the list of white flowers. Time did not permit me to determine to which species of Viburnum it belonged; but it is probable that more than one of this genus would pay for forcing for conservatory decoration.

Blue—Cineraria, Hepatica, Hyacinth, and Siberian Squill.
Purple—Cineraria, Heliotrope, Hyacinth, Tulip, and Violets.
Mauve—Cineraria, Heath, Primrose, and Tulip.
Pink—Azalea, Begonia, Bouvardia, Camellia, Carnation, Chinese Primrose, Cyclamen, Dielytra, Epiphyllum, Fancy Pelargonium, Fuchsia, Heath, Hepatica, Hyacinth, Lachenalia, Rose, Tulip, and Zonal Pelargonium.
Crimson—Bouvardia, Camellia, Cyclamen, Epiphyllum, Fuchsia, Hyacinth, Polyanthus, Primrose, and Rose.
Scarlet—Bouvardia, Carnation, Euphorbia, Salvia, Tropæolum, Tulip, and Zonal Pelargonium. Also berries of Arbutus, Aucuba, Cotoneaster, and Solanum.
Orange—Carnation, Narcissus, Polyanthus, Rose, and Tulip.
Yellow—Azalea, Coronilla, Genista, Narcissus, Polyanthus, Primrose, Rose, and Tulip.
White—Andromeda, Arbutus, Arum, Azalea, Begonia, Bouvardia, Camellia, Carnation, Chinese Primrose, Cineraria, Cyclamen, Eucharis, Heath, Hepatica, Hyacinth, Laurustinus, Lilac, Lily of the Valley, Narcissus, Paper Narcissus, Portugal Laurel, Roman Hyacinth (?), Snowdrop, Spiræa, Staphylea, Tulip, and Viburnum.

—W. T. T.

The Wild Garden.

Daffodils.—In this neighbourhood, as in many other parts of the country, the common Daffodil grows wild, generally in indifferently-drained Grass fields, where I have seen it almost covering the ground. What can be a more beautiful sight to the lover of flowers than to see the meadows a blaze of gold every spring—and why not plant them in the wild garden in equal or superior numbers? To those who would do so—and I promise them they will be well repaid for the small expense and trouble incurred—I would say, "Now is the time." Nothing is more easily done. Send round your gardener with 5s. in his pocket, and he will bring back bulbs in thousands. I am afraid to say how many I procured last spring, and for a less sum than I have mentioned. They were dug up when the bloom was past its best, and I am now looking for my reward; but, as I have just said, now is the best time, as the leaves and flower-buds are sufficiently visible for transplantation, and a whole year is saved by not waiting till the bloom is past. Daffodils seem quite indifferent as to when they are dug up, even when they are in full flower. It is, in fact, better to transplant them from their native meadows, as they only take up Grass room; cattle will not eat them, and landlords hardly look favourably on a tenant who has quantities of Daffodils growing on his premises. Plant the fine double kinds and the varieties of the beautiful and well-known Poet's Narcissus (N. poeticus) abundantly; they will succeed in the same positions and equally well as the common Daffodil, which N. poeticus will succeed as regards the period of flowering. Dry bulbs of the latter may fortunately be bought cheaply, a circumstance which should induce many to naturalise these beautiful plants about their uncared-for shrubbery walks.

Hardy Perennials v. Weeds.—Let me ask—Why, on leaving the dressed ground and closely-shaven lawn, in ninety-nine country houses out of a hundred, should we be obliged at once (the line is too distinct) to plunge into a wilderness of such foul weeds as Nettles and Docks? Why should the ground be smothered up by such shrubs as the common Elder (useless even for firewood, and few of us care for Elder wine, and all have not sons who care for making pop-guns), when we have such a variety of hardy exotic plants and fine flowering shrubs? Most of the finest hardy perennials will thrive as well, even better, in and about the edges of thinly-planted shrubberies. In such positions there is little fear of the harmful spade, whilst from the shelter of surrounding objects, and the depth of good decomposed leaf-soil which is sure to have accumulated for years in such places, many of the more capricious subjects will thrive more vigorously than in the dry borders. Instead of Docks and Nettles why not look upon Peonies or Irises, Phloxes or Larkspurs, and a thousand other beautiful species of hardy plants. They are as easily grown as the weeds, and the trouble consists only in once carefully placing them in suitable positions, after which they may be left to themselves; and if some of the handsomer Grasses and such Ferns as will thrive (and many will be found to do so wherever your wild garden is), are interspersed here and there, the effect of the whole will be greatly increased.—Oxon.

Hardy Fruits.

Now is a good time to plant runners of Strawberries that were temporarily pricked out into nursery beds in the autumn; ground that has been cleared of Celery will be in excellent order for this purpose, if trenched, without any additional dressings, unless the land be very light, in which case give a liberal dressing of heavy loam. The soil in which the Strawberry delights is a loam of medium texture, or what may be termed neither heavy nor light. Plant out in lines at least 2 ft. apart—30 in. is not too much—and about 20 in. from plant to plant, making them firm by pressure with the hand, and mulching the whole of the ground when finished; if they have been moved with care from the nursery beds they will quickly start into growth, but no fruit should be taken from them this season, and all flowers picked off, and they will then be in perfection next year; even this year they will be of great service in places where Strawberries are forced, as by constantly keeping the flowers off, early runners are produced, and all who have to force Strawberries know how important it is, if possible, to secure early runners. All the following are good kinds, and the names are given in the order of merit:—James Veitch, British Queen, Sir Joseph Paxton, Lucas, John Powell, Keen's Seedling, Cockscomb, and Frogmore Late Pine. The best for forcing are President, Vicomtesse Hericart de Thury, La Grosse Sucre, Keen's Seedling, and Sir Charles Napier, the last named being too acid for most palates. Gooseberry and Currant cuttings may now be put in, and will strike freely in any soil or situation, if well drained. Select from the prunings the straightest pieces, not less than 1 ft. in length, and plant in lines 18 in. apart, and 5 or 6 in. apart in the row, treading them in well to ensure the soil being compressed firmly against them. As soon as the buds begin to push, pick out all of them with the exception of two or three at top, and if during the season any show through the soil, remove them also, and have single stems only to each tree. Cuttings that were put in last year should now be lifted and transplanted, giving them the necessary space, and by another season they will be sufficiently large to be planted in permanent positions. If the annual dressing for Gooseberry and Currant quarters has not yet been given, it should be applied at once, after which, sprinkle or rather scatter over the trees immediately after a shower of rain a mixture of lime and soot in a dry state, as a deterrent to birds, which ofttimes seriously endanger the crop of fruit through their fondness for the buds. All trees that are intended to be regrafted should, ere this, have been cut back for the purpose, and as soon as the sap begins to rise the operation may be performed. The scion or grafts should be heeled-in in a cool situation before the buds begin to swell, as it is desirable that the stock be in advance of the graft, hence the reason for keeping them late by cutting them early. Clay for grafting should also be got ready and frequently worked about, mixing with it cow or horse manure, which tends to make it more adhesive. All recently-planted trees, especially standards, that are likely to be injured by the wind should be securely staked, and any defective stakes that have been used for training espalier, pyramidal, or other shaped trees, and which still require such supports, should be made good at once, as there will be little time for such work a few weeks hence. Pruning ought now to be finished, and nailing, tying, and dressing the trees advanced as fast as possible; and if, through lack of time or labour, it be found impracticable to paint each tree with composition as a preventive against insects, as soon as the whole are nailed and tied syringe the walls for two or three days successively with soap-suds, which are most efficacious in the prevention of the green or black aphides. Apricots are, with us, unfolding their blossoms, and, to ensure a crop, must be well protected with one or other of the materials named in a previous calendar. Here the wall trees are protected with scrim canvas worked by rollers, ropes, and pulleys, and fixed under a coping that projects 15 in.; it can be let down or drawn up in a few minutes, being called into requisition when we are visited with frosty nights, keen winds, or very bright sunshine, which last is often, through the nursing the trees have previously had, as injurious as a sharp frost. —W. Wildsmith, *Heckfield.*

PLATE X.

THE TRANSPARENT GAGE PLUM.

Drawn by F. W. BURBIDGE.

This is one of the best of the Gage section of Plums, and one which, in addition to its beauty of form and colour, has the merit of being a free healthy grower, an early and great bearer, hardy, and a kind which never misses a crop. It was raised about thirty years ago, at Paris, by M. Laffay, who gave it the name of Diaphane, and it was afterwards called Reine Claude Diaphane. Some years after its appearance, M. Oberdieck, the celebrated German pomologist, described it under the name of Durchscheinende Reine Claude, otherwise Transparent Reine Claude, or, as we now call it, Transparent Gage. The fruit is a little larger and of a brighter colour, especially when well exposed to the sun, than its parent the Green Gage; it ripens from the middle of August to the end of September, and is valuable on account of its coming into use during several consecutive weeks. The annexed plate so exactly represents its general outward appearance as to render description unnecessary, but it may be stated that its flavour is only in a small degree second to that of its parent, whilst in productiveness it greatly surpasses it. The trees, too, bear fruit at a very early age, an advantage not to be overlooked. Like all Plums, the Transparent Gage should not be too much pruned; indeed, after starting the young tree fairly, the rest may as a rule be left to Nature at least as far as pyramids and standards are concerned: the knife in unskilful hands is the worst enemy which fruit trees have.

The Green Gage, the queen of all Plums, has at least fifty synonyms, especially in France, where it is best known as Grosse Reine Claude. It was found in a wild state by M. Karl Koch in the Caucasus, and is the progenitor of a race of closely allied sorts, all excellent, but all a little inferior, as far as flavour is concerned, to the type. Taking the Gages alphabetically, we have the Autumn Gage, a beautiful pale yellow Plum, with a rich and excellent flavour; Bella, an apricot-coloured Gage, excellent for cooking; Brandy, a kind like a small Golden Drop, with a delicious and peculiar flavour, said to resemble that of brandy; Brignais White, considered by some to be superior in flavour even to the Green Gage itself; Bryanston, a larger and later kind than the Green Gage, but inferior to it in flavour; and Foote's Golden Gage, an American sort, with a rich vinous flavour. To these must be added other varieties of the Green Gage, such as Brahy's, a very large kind, resembling the Green Gage in all respects, only not quite so luscious and rich; Early Green Gage, a sort with a good deal of its progenitor in it, but earlier; Jodoigne, larger than the type and nearly as good; July, earlier than the type, and otherwise almost equal to it; Kester's, a small kind, but a great bearer, and delicious in flavour; and Late Gage, a variety which is ripe about the middle of October, both rich and good. Other Gages consist of Henrietta, an American sort, which attains great excellence in this country; Imperial, another American variety, rich and good; Moyret's, a French kind, with a pleasant perfume; Prince's Orange, coarse, and only fit for cooking; Purple Gage, a delicious little Plum, which, in a dried state, is exquisite; Reagle's, an American sort, with a good vinous flavour; Red Gage, another American kind, but not remarkable for high flavour; Shuyler's, also an American sort; Spotted Gage, coarse, and only good for cooking; Yellow Gage, called Little Reine Claude, a kind inferior to the parent in quality; Yellow Dana's, an American Gage, possessing a delicious flavour; Yellow Peters, a good sort, somewhat like Coe's Golden Drop; and Yellow Princess, a beautiful golden-fleshed kind, rich and delicious. Besides these there are, likewise, other sorts belonging to the Gage family, such as Coe's Golden Drop, sometimes called Golden Gage; the Azure Hâtive, or Blue Gage; Guthrie's Aunt Ann, and his Tay Bank. The Hudson, the Jefferson, Lawrence's Favourite, Lenné, General Hand, Lucombe's Nonsuch, MacLaughlin, Abricotée de Braunau, Blecker's Yellow, Denniston's Superb, and Woolston Black Gage, all belong to the Green Gage class. The Washington, too, possesses many of the qualities of the Green Gage, and, as a preserve, is the finest of all Plums.

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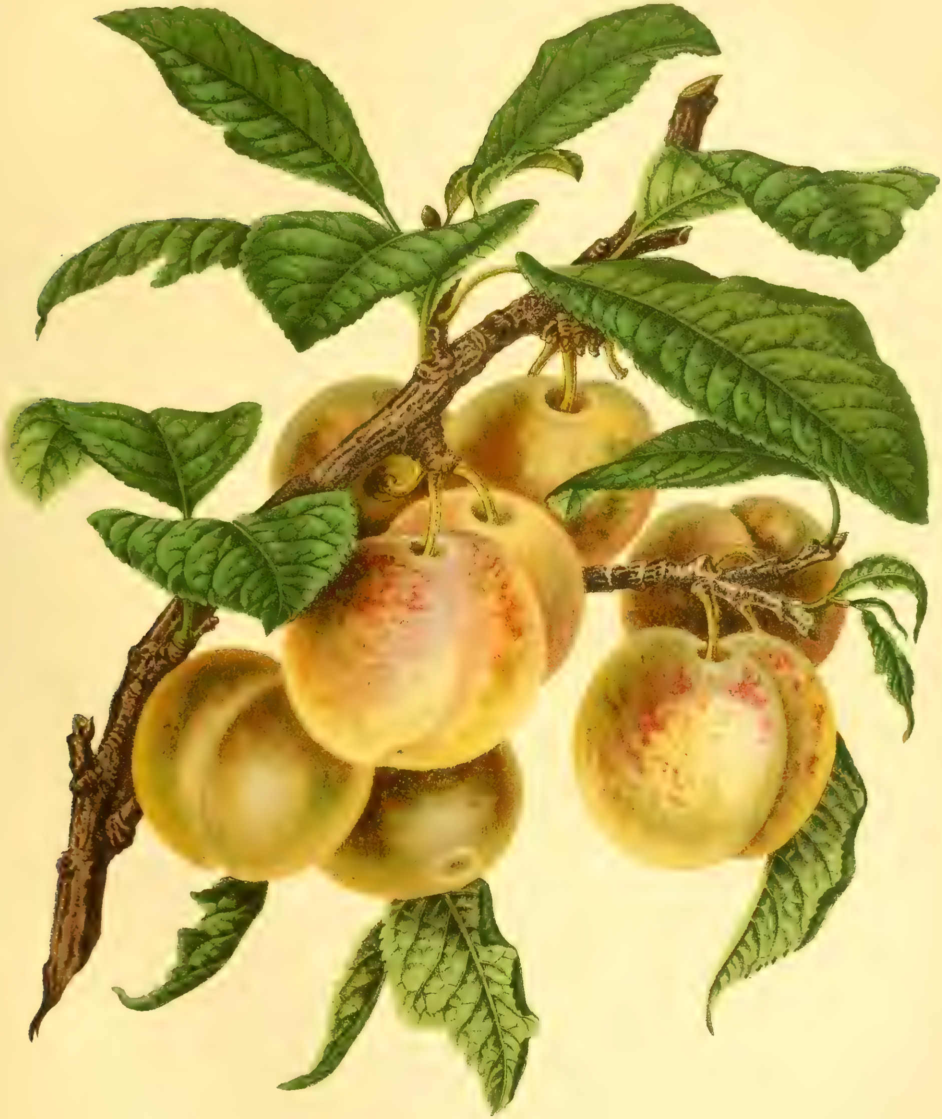

TRANSPARENT GAGE PLUM

To the foregoing list should be added Webster's Golden Gage, a kind raised about eight or nine years ago at Gordon Castle, near Fochabers, by Mr. Webster, and originally sent out by the firm of Messrs. Peter Lawson & Son, of Edinburgh. It is said to be a seedling between Coe's Golden Drop and the old Green Gage. It is a medium-sized fruit, intermediate in character between the two above-named sorts, and is highly spoken of for its hardiness in exposed situations. In the north of Scotland it ripens well, having there the flavour of a southern country Gage; it deserves to be more widely known than it is. Last, but not least, is the Lawson Gage, a Plum raised in the Carse of Gowrie by that veteran horticulturist, Mr. Archibald Gorrie, Annat Gardens. It is a hardier Plum than the old Gage, of first-class quality, and very prolific. This was also originally sent out by Messrs. Lawson.

As regards soil for this class of Plums, Miller recommends one not too wet, or heavy, or over-light and dry; most writers have followed his recommendation, which, in a general way, is not bad, but, in my opinion, not the best. Plums, like Vines, arrive at the greatest perfection in strong loamy clays, mixed with sand or pebbles. I have planted many hundreds of Plum trees in such a soil, and always with the best results. It is my opinion, too, that if all fruit trees which we bud or graft on the Plum, such as the Apricot, Peach, and Nectarine, were planted in much stronger soils than they generally are, we should not bear so much of mildew and premature decay as we do. The Moorpark Apricot, in particular, dies off piecemeal from being planted in too light soils in which there is no clay. Plum trees, like Asparagus and Seakale, like to have an occasional dressing of salt just as they are beginning to grow, but not when they are dormant. J. Scott.

Merriott, Crewkerne.

TREES AND SHRUBS.

DENDROPHILIA;

OR NOTES FOR PLANTERS, ESPECIALLY ON EXPOSED SEA-COASTS.

BY SALMONICEPS.

> "Be aye stickin' in a tree, Jock; it'll aye be growin' when ye're sleepin'."—*Laird of Dumbiedyke's Advice to his Son.*

It has been said that one half of a well-spent life is devoted to acquiring facts, the other half to making use of them; but the boundary between these two periods can scarcely be clearly defined; probably in useful lives the two processes go on simultaneously. At all events, as no man can tell how long he is *fruges consumere natus*, he does well who not only uses, but imparts facts as soon as he is tolerably certain they are correct. This is especially the case regarding the planting and management of trees; for when a man lays out a woodland, the results of his labour, under equal conditions, will be enjoyed by those who live five hundred years after him (that is, if the wood be planted with a view to longevity rather than quick returns); thus, if the success attending a proper method of planting, a proper selection and management of trees be so enduring, failure resulting from ignorance of these conditions is specially mortifying. He who plants a tract of country will rarely see his trees more than thirty years old, and can never see the full results of his undertaking; but how easily he may live to see total failure attend the scheme! It is because I have seen with regret the disappointment attending well-meant efforts to adorn or to utilize our stormy coasts and hill-sides, that I have endeavoured to ascertain and put together a few facts and principles which appear to have especially conduced to the many instances of successful woodcraft in this country. Evelyn quotes a saying of Cato's: *Male agitur cum domino quem villicus docet* (It goes ill with the master whom the servant instructs). However complete the knowledge and active the habits of the woodman or forester may be, the woods, old and young, will not be made the most of if the master have to learn his lesson from the servant. It is well for that estate whose resident owner is really a woodcraftsman. It is he who must decide what land to sacrifice to planting, a sacrifice which, if rightly offered, will at no distant date be amply repaid by shelter, beauty, and timber available for home purposes. It is he who must design all planting and management for solely ornamental and landscape effects, the woodman's duty being primarily to manage woodlands irrespectively of beauty, so that they shall be as quickly and permanently remunerative as possible. It is he who should institute, superintend, and replenish an experimental arboretum proportionate to the size of his estate, where the ornamental or commercial qualities of new and rare species may be ascertained; in short, in this, as in every other business, the master's eye will do more than the best servant, provided always, and this is not always taken into account, that the said master has a practical knowledge of his subject. A careful servant is better left alone than interfered with by an ignorant master. An instance of this kind came under my notice not long since. During a stroll with a friend through some thriving Fir woods, he remarked, "How much nicer these trees would look if one could afford to send men to trim all the dead wood off their trunks!" It is possible that had my friend been a millionaire he would have endeavoured to beautify his Fir woods by this treatment; but a slight acquaintance with the nature of resinous trees would have made him aware that injury, if not absolute destruction, would result to most coniferous trees from treatment of that kind. Fortunately for posterity, the interest which is generally taken by landowners in their woods is daily becoming more intelligent; still it must be confessed that a vast deal of money is lost by injudicious planting, and a still greater sum remains unrealised from want of care and management after planting. Dr. Johnson once said that, during the whole of his tour in Scotland he only saw two trees which were tall enough to serve for hanging a man.* It might surprise the learned doctor were it possible for him to learn that at present the county which possesses the largest acreage of woodland in Great Britain is a Scotch one, namely, Inverness-shire. The following is an extract from the agricultural returns of Great Britain, 1874, showing the relative proportions of wood in different parts of the kingdom:

	Average under wood	Total acreage.	Approximate proportion of wood to acres.
Great Britain	2,187,078	58,815,353	1 in 27 acres.
Ireland	325,173	20,322,641	1 in 62½
Scotland alone . . .	734,490	19,496,132	1 in 26½
Inverness-shire . . .	118,818	2,723,501	1 in 22 9-10
Yorkshire	118,127	3,882,851	1 in 32 5-6
Sussex	101,818	934,006	1 in 9¼
Great Britain, Ireland, Isle of Man and Channel Islands .	2,512,251	76,318,648	1 in 30 2-3

It will be seen from this table that Scotland shows a slightly greater proportion of wood per acre than England; which, considering that the general character of the country a hundred years ago was bare and moorland, speaks well for the activity shown of late years by proprietors in planting. Sussex, in proportion to its size, is much the heaviest-wooded county in the British Isles. A notable example of the change for the better that may be wrought in a single lifetime occurs in this county (Wigtownshire). The late Earl of Galloway, who died in 1873, enclosed and planted a barren piece of moorland of about 1000 imperial acres in extent. He lived to see the entire character of the upland changed by his work. From being a featureless, bleak, unprofitable waste, it has become a luxuriant woodland, and the adjoining land has so benefited by the shelter that rich crops are grown up to the very fences of the plantations, and all traces of the moorland are well-nigh gone. Of course much depended on the enterprise of the farmers, which was forthcoming; but a main element in the change is the shelter of the woods, which are composed principally of Larch, Scotch Fir, Spruce, and Oak. There is now an extent of wood of sufficient size and sufficient variety spread over the country to enable us to judge how and what to plant so as to best overcome the natural difficulties which must occur in an exposed district. These notes, although principally of a local character, and referring to the west coast of Scotland, may, it is hoped, be of use to some of your readers. The three principal difficulties which have to be overcome on the west coast of Scotland by the planter arise from exposure, sub-soil, and rabbits.

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* One of these trees stood opposite the smithy at Ellon, in Aberdeenshire, and was blown down in January, 1875.

Exposure.

As regards this, we have only to use our eyes to appreciate the fierceness of the battle which the foremost rank have to wage with the Atlantic gales. But it is remarkable how the direct influence of the wind may be overcome by judicious magagement. Four, three, and even two ranks of well-selected trees on the windward side of a wood are capable of so lifting and sifting the blast as to allow those to leeward to rise, provided this forlorn hope receives timely thinning. Thinning is imperatively necessary for all woods, but especially for those on exposed sites, or on a thin soil. In some favoured inland districts trees grow as if they could not help it, in spite of neglect; but such is not the case when, approaching the coast, battle has to be done with constantly recurring gales. It is not an uncommon, but it is an ill-founded opinion that trees which are most exposed should be left thicker than those which receive shelter.

It is hardly necessary to say that trees depend for existence on their leaves, as certainly as animals do upon their lungs; a tree with scanty foliage is accurately analogous to a narrow-chested man. Trees grown close together have no room for lateral foliage, and bear only a mop of leaves at the top, and thus become narrow-chested. Now the tops of trees exposed immediately to the sea-breeze are precisely the parts that suffer most (the singed appearance must be familiar to all who live near the sea), therefore it is important that our forlorn hope or foremost ranks should have room to breathe laterally, should have sufficient elbow-room to clothe their sides with leaves. Besides, the very tops of the trees will suffer less in this way; for a moderately open mass suffers less than a wall-like hedge from the blast, which is gradually sifted by the former, but exerts full sway on the latter. What affects one end of the tree, is of equal importance to the other end; and ample root-room is as necessary to produce a healthy tree as head-room. It follows from what has been said that the windward side of an exposed wood deserves, and will repay, extra attention. Whereas the more sheltered parts may remain untouched till the usual time for thinning comes (at an age of ten or twelve years), a watchful and frequent removal of a due proportion of the four or five outer ranks of trees must be practised from a very early stage; they should never, in fact, be allowed to touch one another. It may seem scarcely worth the trouble, but it is of tenfold importance that the exposed trees should be allowed to develop roots and leaves to the full. In a sheltered situation trees may be run up into poles, and when thinned will feather down, spread into sightly specimens, and make timber; indeed, trees so treated are often eventually the best and most beautiful; but a sudden thinning of the exposed trees will let in the enemy, the advance guard will fall before the wind, having no root-room, or, if they stand, will be apt to become hide-bound from the sudden cold. It must not be gathered from this that the writer advocates a bare windward side—far from it; the object to be attained is that every tree standing on the key of the position should be furnished above and below ground to the utmost, which can not be obtained by periodical thinning, but by taking trees here and there as required. The extra labour involved will be amply repaid to the owner of the woodland. Another effect of sea exposure may be noticed in the prematurely aged look which is caused by the growth of grey Lichen on the bark. Although it does not appear to be hurtful to the tree, it is unsightly, and destroys the clean glossy look of health which is so pleasing to the forester's eye. Beech, Horse Chestnut, evergreen Oak, Holly, and most coniferous and evergreen trees suffer comparatively little; but Larch, Oak, Elm, Plane, and Sweet Chestnut are often quite hoary with it. This growth is sometimes attributed to the effects of a damp sub-soil, but as it disappears in more inland places, it probably arises from the constant damp caused by salt encrustations of sea spray, which is often carried several miles in a heavy gale, and may be readily observed on window-panes near the sea-coast.

Sub-soil.

The next difficulty which offers itself very generally in Scotland is the unkindly and uncompromising nature of the sub-soil, which frequently consists of glacial till. It is quite impenetrable to the roots of trees, and retains wet about them when they spread along the top of it. Sometimes it comes to the surface, in which case nothing can be done with it, but fortunately there is, as a rule, a stratum varying in depth from one to several feet of good soil, loam or alluvial, over it. Over a great part of southern Scotland the average depth of this fertile stratum is not more than 12 or 18 in., so here we are brought face to face again with the necessity for early and regular thinning, so that the roots may acquire in area what they are denied in depth. The proximity of the till should be borne in mind when undertaking the transplanting of large shrubs or specimen trees. If the sub-soil be scooped out, a basin is formed, which retains the water about the roots, and the loss of the plant must follow. Where it is necessary to remove large-sized plants a drain should be cut to form an outlet for the water.

Rabbits, &c.

The third enemy on our black list is the rabbit, and if the damage done in past and present times by this little animal could be reckoned, it would amount to a sum so huge as to justify the forester in considering it one of his principal foes. Of course it has many good qualities; rabbit shooting is capital sport, and rabbit broth is excellent stuff, not to mention rabbit pie, rabbit smothered in onions, &c., &c., but, from the forester's point of view, it is to be wished that they were all smothered—in something. There is no remedy but extinction. As long as there is a couple of rabbits on the ground you will find your Laburnums and Hollies gnawed; sometimes large trees are gnawed right round. Of course much may be done on a small scale by enclosing newly-planted trees with wire netting, and there are mixtures which should be applied to the stems of specimen trees. One of the best of these, and quite effectual, is composed of a solution of quicklime and water mixed with cow-manure. Plenty of the latter savoury ingredient should be put in, both to make the plaster adhere, and to give it a greenish colour when dry, otherwise it dries too white. Another excellent protective fluid is sold by Messrs. Davidson & Co., of the Scotch Colour Works, Leith, of which a 56 lb. cask has lasted here for three seasons. It is inexpensive, and being transparent, is hardly noticeable on the bark when dry. Care, however, should be observed not to use it upon very young coniferous trees. There is fortunately one beautiful and valuable forest tree which rabbits, as a rule, will not touch, namely, the Corsican Pine (Pinus Laricio), a tree which is now not much dearer than Larch, and the timber of which is said to be very valuable.

Trees and shrubs recently planted have special attractions for rabbits and hares, and most trees are safe when they have attained a certain size; but there are two ornamental trees which are never safe, namely, Hollies and Laburnums; the largest and finest specimens are as likely to be attacked as young saplings. Hard-wood are more liable to the attacks of ground game than Firs, especially Elm and Ash. The Leith mixture above mentioned, though injurious to very young Conifers, does no harm to young hard-wood, and the stem may be anointed at the time of planting with comparatively little trouble and good effect; for, by the time the protection is worn off, the tree will be established in the ground, and be less likely to attract rabbits. Wood-pigeons, black game, and the rapidly increasing capercailzie in certain parts of the country, do much damage to young woods. The two latter feed upon the young shoots of Firs and other trees, and it is surprising what a mass of buds and twigs may be turned out of their crops. Wood-pigeons do a great deal of harm in a different way. Anyone who has walked through woods frequented by them about five o'clock on a bright summer morning, has doubtless been soothed by the cooing of unnumbered doves, perched on the tree tops, their mates keeping house below. A beautiful sound it is, but that is just the time the mischief is done. Every pigeon sits as near heaven on a fine morning as he can, which, in a Fir wood, means on the leaders of the trees—at that season young and tender. In the leader of a young Fir is centred all the promise of a clean straight stem, pointing direct from the axis of the earth to the zenith. When this is bent aside, the tendency, especially of all the Picea or Silver Fir tribe, is to send up several leaders; the result being seen in double or treble stems, instead of one fair clean shaft. Therefore the wood-pigeons, which are less easily kept under control than rabbits, may justly be looked on as injurious to young Fir woods.

Effect of Ivy on Trees.

The growth of Ivy upon the stems of trees should be vigorously checked. Beautiful as it is in all stages of its growth, so beautiful that here and there trees should be mantled with it for ornamental purposes—beautiful whether in dense, glossy carpets on the floor of an old wood, or swung in heavy masses from swaying boughs—beautiful on cottage porch or castle tower—yet it should never be allowed to climb trees which it is important to keep in health, such as memorial or specimen trees, or those grown for profit or protection. In a moist climate and on a genial soil, its growth is so rapid that it becomes no easy matter to keep it in check. The Beech alone almost seems not to suffer from it; at least the writer cannot recall an instance of a Beech tree smothered with Ivy. The Beech's bark is so smooth, its growth so vigorous, and its shade so hurtful to all other plant-life (except that of Truffles, which grow on or among its roots), that the Ivy does not seem to get a chance with it. But from all trees with a rough, soft, or thick bark, it should be removed before it has time to grow to any size, or it will be difficult to do so without injuring the bark, a point to be observed, especially in dealing with some of the Fir tribe. Almost everywhere else Ivy is welcome as the most beautiful climber in the world. It is a mistake to think it makes a house damp. On the contrary, as long as it is kept from penetrating crevices, and running under the eaves or into window sashes, it makes a house dry; it acts as a waterproof covering, and protects from frost and weather. Then as to beauty, many an ugly house might be made, if not architecturally beautiful, at least home-like and picturesque; and many a flimsy cottage would be all the warmer and prettier for a great-coat of Ivy.

Season for Planting.

There is no subject in forestry which has been so amply discussed with less unanimous conclusion than that of the best season at which to plant. The climate of these islands is so variable that perhaps it has been found impossible to lay down an universal rule. It is, indeed, possible, with sufficient care, to plant or transplant at any season with success; at the same time, certain conditions are so obviously desirable that certain seasons ought reasonably to be preferred to others. Two main objects should never be lost sight of, namely, that newly-planted trees should not, if possible, be exposed to protracted drought, and that the warmer the soil at the time of planting the better. For that reason we should exclude the months of February and March, the months of all others during which the temperature of the earth is lowest, and when searching winds and dry weather may most safely be predicted. Nevertheless, it is exactly at this time that a great deal of planting in this country is done. Evelyn's seventh Aphorism (Sylva, chap. xxxii.), contains sound advice:—"Begin to transplant forest trees when the leaves fall after Michaelmas; you may adventure when they are tarnished and grow yellow; it is lost time to commence later; and, for the most part of your trees, early transplanters seldom repent; for sometimes a tedious bind of frost prevents the whole season, and the baldness of a tree is a note of deceipt; for some Oaks, Hornbeams, and most Beeches, preserve their old leaves till new ones push them off." The best modern opinion is decidedly in favour of autumn planting, both for Fir and hard wood. The work is best done when the summer's growth is ripened and the sap is falling or about to fall. The ground is then of a kindly warmth, the roots will take hold at once before the winter's storms and frost are upon them, and the plants will be quite ready to start away in spring, which is out of the question when planting is delayed, as too often from choice or necessity it is, until February or March. This much may be laid down as a safe rule, that deciduous trees transplant best when near the close or just at the close of their period of growth. With evergreens no such law can be laid down. It certainly appears that in ordinary planting Firs do best in autumn. But planting or transplanting specimen trees or shrubs, where sufficient care can be taken to prepare pits beforehand, and to transfer the plants at once from the nursery to their new position without allowing the roots to dry or the young shoots to flag, can best be done in May or June. Pines and Cypresses receive hardly any check treated in this way; and Hollies, though they frequently shed every leaf, very quickly recover, and grow away as if nothing had happened.

Mixed Planting.

There is a practice in this country which is in many ways objectionable, and which ought to be discontinued, or at least modified in degree, for it is unprofitable and unworkmanlike, and that is the system of Mixed Planting. It originated, no doubt, when woodcraft became generally revived, a reaction having set in about a hundred years ago (in the North, at least) against the long prevailing custom of stripping the forests off the face of the country. It arose probably in great part from a want of experience in the behaviour of different trees upon varying soils. It was considered that the simplest way to find the most suitable trees was to plant them in such variety, that those which were best suited to the soil might eventually grow away and form the wood. It was a practical solution of the question, "What is the best tree for such and such a soil?" But it was, at best, only experimental, and we ought now to have acquired such knowledge and skill by observing the results, that we should be able to plant more scientifically, and select with judgment the species best suited to the soil. With such knowledge, it is a wasteful and slovenly method to stick trees in pell-mell to fight it out among themselves. It is a far higher art to map out a woodland, and be able to say:—"Here, in future years, shall be a grove of Beeches—there, a glen of Oaks; that hillside shall be dense with Pines, and along the crest shall tower rank after rank of Silver Firs." That is Nature's rule. You do not often, in natural woods, see one subject frittered away into another, but the secret of the effect is the ordering of the masses. Woods thus planted are not only more beautiful, but are apt to be more remunerative. Of course, the trouble of laying out is infinitely greater, and requires more brains; but the after management is infinitely simpler. Anyone who has marked a wood for thinning, will agree how much easier it is when the wood consists principally of Oak, or Fir, or any single class of tree. In a mixed wood, one is constantly worried to decide between this Oak and that Sweet Chestnut, this Silver Fir or that Scotch Fir, and so on. Then, as to beauty, the effect of masses correspond very much with what is called breadth, in painting. A master of breadth will so manage his materials, as to present to the eye on a few square inches of canvas or paper, the effect of a wide expanse of air, or light, or gloom. So it is in landscape. A master of breadth will so dispose his woods, as to give the effect of a forest in the ordinary bounds of a gentleman's park. The object of park scenery is professedly to please the eye; the eye cannot rightly be pleased without the sympathy of the imagination, and how can the imagination be pleased by a system so evidently artificial as mixed planting? Compare the effect of a single Scotch Pine standing among a mass of Beech, Elm, and Oak, with the effect of a healthy hill-side clad with a solemn company of 1000 Scotch Pine, broken here and there, it may be, by a lightsome glade of Birch. And would not the effect of the last be marred, be lost, if Pine and Birch were planted alternately throughout the mass? The pictorial effect of an avenue of old trees is often most impressive, and in many places forms the feature which distinguishes one park from another. The very nature of an avenue, to be perfect, requires that it should be composed entirely of one kind of tree. No matter what the tree is, be it Beech or Lime, Silver Fir or Oak, Yew or Plane, so long as there is but one species employed in the avenue, a character and peculiar charm is obtained, which would be utterly missed in mixed planting. There is another artistic effect obtained by the massing system, and a very important one as regards beauty. Each kind of tree allows different plants to thrive under it, and so gives a positive character to the ground. The floor of a Beech wood is bare and hollow, the silvery stems gleaming like marble pillars relieved against the ground of rich russet leaves; that of an Oak wood is often rich with greensward, or rough with Brambles and Holly; indeed no tree is more kindly to undergrowth than the Oak. Scotch Fir admit a deep growth of Blackberry and Heather, even when growing very close, while Larch and Spruce spread beneath themselves a dense carpet of fallen needles, which admits of little growth except that of the male and lady Ferns, in such places often most luxuriant. Do not be afraid of monotony in this bold system of planting. Is there monotony in a regiment of Lancers—in a brigade of Guards on parade—more than in a motley crowd of all uniforms or no uniforms? It is this noble monotony which we see in the noblest natural scenery, in the Pine forests of the Tyrol or the Himalaya, on the heath-clad hill-sides of Scotland, even in the unnumbered multitudes of blue Hyacinths in many a home landscape in May. We do injustice to grand materials when we treat our parks, which should be natural pictures, with an ignoble want of breadth and character, and a frittering inartistic system of planting.

By these remarks it is by no means intended that all blending of foliage is objectionable; some of the most beautiful woodland effects result from the contrasting colour and form of different species. Only this should not, as it too often is, be left to haphazard; it must be the result of far-seeing design and artistic feeling. A most interesting occupation is thus open to one possessing these rare qualities, for, given the space to work in, the materials are practically inexhaustible. Trees and shrubs from the opposite ends of the earth may grow together with happiest effect. The grey silky foliage of Pinus excelsa from Bhotan increases in lustre when relieved against the sombre masses of Pinus austriaca; the effect of the blue crosslets of Picea nobilis is almost startling when seen in company with the greenest of all Pines—insignis. The groups and contrasts are endless; and so a higher purpose should be maintained in laying out ornamental woods than the mere object of covering so many acres for game or shelter. It often happens that rare and good plants, Pines or deciduous trees, and flowering shrubs come to hand at a time when it is not easy to find a proper place for them, and in such small quantities that it is not practicable to enclose a special piece of ground for them, and so valuable plants are thrust in between or even beneath older trees, where they never get a proper chance, and are overlooked, forgotten, and finally disappear, or are drawn up into weak attenuated eyesores among their more vigorous neighbours. This is, no doubt, a good thing for trade, but surely if it be worth while to buy expensive trees, it is worth the sacrifice of a bit of clear ground, of which centuries hence they may still be the ornament. Not long since the writer noticed a newly-made grave in a country churchyard. On either side of the headstone had been planted a hybrid perpetual Rose of the choicest sort, evidently with the intention of forming a little arch over the place where the head of the departed was laid; but alas! the hands that planted them were more loving than skilful, for the grave was overhung by an Elm tree, which cast so dense a shade that the Roses soon died. Young Conifers are so neat in habit that they are often planted far too near buildings. It is very absurd to see, as one often does, young specimens of the most gigantic trees in the world placed so close to the dining-room windows that when they reach maturity they must inevitably overhang or injure the house.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Evergreens under Trees (H. S.)—Laurustinuses and Rhododendrons do well under trees, also Aucubas; and, particularly well, Hollies. Common Laurels and Yews are good, as is also Evergreen Privet. Among dwarfer plants the St. John's Wort and Ruscus racemosus do very well under trees.

Berry-bearing Aucubas.—Your correspondents who wish to have berries on their Aucubas should plant out the male Aucubas amongst the others. The first year they may not flower at the same time as the female plant, but they will do so in future years, when under the same conditions. I have at present two beds treated in this way, loaded with berries.—A. H., *Thoresby*.

A Large Seed Bed.—The Lawson Seed and Nursery Company commenced the present planting season with 30,000,000 one year old Larch seedlings, which are now nearly all sold. These were all sown last April and May, about 3 tons of seed being used. The young plants were from 3 in. to 5 in. high at the end of the summer's growth, and retain most of their leaves up to the present time, instead of losing them, as is commonly the case with seedlings from cultivated trees. This result is attained by employing the best Tyrolese seeds, specially gathered for the Lawson Company.

Dear Willow Leaves.—The leaves of Salix alba, and many other species of Willow are, it is said, employed in making a kind of Tea called T'ien-cha, and are openly mixed at Shanghai with the Tea intended for exportation.

THE LIBRARY.

PICTURESQUE EUROPE.[*]

This is a remarkable book, and one with a great subject to deal with. It was no doubt suggested by, and will form a kind of companion volume to, Messrs. Appleton's noble "Picturesque America," which is so admirable for its designs and engravings. "Picturesque Europe," in its first part, is wholly devoted to Windsor, and has more space and illustrations devoted to it than is desirable, if anything like justice is to be done to picturesque England, leaving the wide world of picturesque Europe out of the question. The main interest of the book centres in its illustrations, which are numerous, large, and well drawn. The steel plates are of very good quality, but the woodcuts are not of the highest class; though spiritedly and well-drawn, a profuse spattering of hard white spots on inky blades produces a somewhat disagreeable effect. In this respect "Picturesque Europe" will not bear comparison with the delicate and rich engravings in Appleton's great book, or in those seen in the best French illustrated works. We speak thus plainly, through regret at the too evident imperfection of the art of wood-engraving in London. A great centre of literary activity like London should not be left so far behind in this respect. The illustrations in even the most successful of our monthly magazines, so suggestive of the besom and the ink-pot, are a fair illustration of what much of our engraving is. Yet, so far as books are concerned, no art can be more precious than good wood-engraving, which, in its finest examples, has all the delicacy and more than the variety of steel or copper. Our main hope of improvement in this respect rests with the standard the great publishing houses are satisfied with; and therefore we hope that as this great work progresses its wood-engravings will improve in delicacy of detail and truth and softness of gradation. The accompanying illustration is a representation of one of the scenes at Virginia Water, and a fair example of the best woodcuts.

HOW TO PLANT APONOGETON DISTACHYON.

I have now in fine condition an example of this beautiful hardy aquatic, growing in a small tank originally intended for gold fish; but as my best endeavours to preserve the lives of the last-named proved futile, I thought it might be turned to horticultural purposes, and a plant of the Aponogeton coming in my way, I thought I could not do better than start it in the tank. This I did in June, 1875. I first of all laid some pieces of decayed turf on the bottom, and on this 1½ in. of rich soil; then the roots of the plant were spread out over it, and some more soil placed over them, and at the top other pieces of turf; then a few stones kept all in their place, and the tank was filled with water. In a few days the plant commenced to grow, and by August the lovely green oblong leaves quite overlaid the surface of the water, with the flower-stems coming up through them. Since then I have never been without flowers on the plant, and as it increases in vigour, the blossoms become larger and larger. A certain amount of decay of leaf is constantly going on, but a few water-snails, which find a home in the tank, act as scavengers, and there is no offensive gathering of matter. My desire is to press upon the attention of those who love flowers the cultivation of this charming aquatic; and that there should be no doubt as to the hardiness of the plant, I may observe that it is growing in an unheated glass structure outside my dining-room window, and that on several occasions during the winter the surface of the water was quite frozen over, but without injury to the plant; in fact, it is hardy enough to grow and flower in the open air. As far as my experience of this plant goes, it does better in a cold house than in a warm one, which is an additional advantage. There are many odd places in a garden in which a small tank or pond might be constructed for the culture of the Aponogeton, while if kept near an open window, where it could have abundance of light and plenty of air on all suitable occasions, it would be found to make an excellent window-plant. A cold house—and there are many of them attached to the villa residences round London as well as all large towns, that are almost entirely unfitted for the growth of plants—is well suited for the culture of the Aponogeton, while the exquisitely fragrant flowers, reminding one of those of the Hawthorn in early May, amply repay the cultivator. Another great advantage is that it flowers most abundantly during the winter months. Quo.

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[*] "Picturesque Europe." Cassell, Petter, & Galpin, London.

VIEW NEAR VIRGINIA WATER.

THE FLOWER GARDEN.

NEMOPHILAS.

Next to Mignonette no hardy annual enjoys so much popularity as the Nemophila. Before spring flower gardening became so fashionable, it used to be a common practice to sow a pinch of Nemophila seed early in autumn, in order that a mass of beautiful blue flowers might be forthcoming in the spring. For bedding purposes few hardy annuals excel the Nemophila; its habit is dwarf and neat, and a quantity of plants of it run into each other and form an even and compact mass of colour. In earlier days, when the old Nemophila insignis was almost the only variety known, some charming effects have been obtained in early spring by having beds of it edged with a neat margin of the white-leaved Cerastium or rosy pink Saponaria. In other cases mixed combinations of Mignonette and blue Nemophila are very charming, but however used, whether in pots, in window-boxes, or on rockwork, or in beds, it is always an effective plant. Now-a-days we find in the seedsmen's lists about twenty varieties of Nemophila. Although it is probable that between many of these the difference is infinitesimal, a selection of seven or eight kinds might, however, be made with advantage. To the insignis class has been added an improved kind known as insignis grandiflora, the flowers of which are large and of a clear bright blue, and a good companion plant to this is found in grandiflora alba, the flowers of which are pure white. In this section two new and distinct hues of colour have been added in the forms called lilacina, the flowers of which are of a pleasing shade of lilac: and purpurea rubra, which has puce-purple flowers, altogether a new hue in this family of plants. The Discoidalis section also includes some striking flowers, among which may be mentioned auriculata, a kind rich crimson-brown in colour with a white eye, and vittata, a velvety-black margined with white. Another strong-growing section is that of which the type is maculata, a form well known for its large-veined and spotted flowers. The best representatives of it are maculata albida, which has white flowers blotched with purple, and m. grandiflora, white-veined and blotched with purple. There is also a variety in which the foliage is variegated. Among the forms of Nemophila atomaria are some very attractive, dwarf, compact-growing kinds that are well adapted for small beds or edgings; these are atomaria cœlestis oculata, clear blue, blotched with black; and atomaria elegans, the flowers of which are pure white, with a dark chocolate centre. The periods of the year at which Nemophila seed should be sown are early in August for spring flowering, and April for summer blooming. In order to secure a good display of flower, however, the best time is to sow in August, on light soil where the seed can germinate freely, and the plants will not acquire too robust a growth before winter sets in. If it be possible to sow the seed where the plants are to flower, the results will be most satisfactory; but if transplanting be necessary, it should be done early in the winter, when a ball of earth should be attached to each plant, and to secure this thin sowing is indispensable. As a plant for the decoration of window-boxes, the Nemophila has few equals. A box 6 in. in width will afford a delightful display of bloom, if it have a back row of Mignonette and a front row of blue Nemophila. Good-sized pots filled with plants of Nemophila are worthy of a place in the conservatory or verandah; indeed, the uses to which this beautiful hardy annual may be put are so numerous that it would be difficult to say where it would be out of place. A. D.

Nemophila discoidalis vittata.

Nemophila insignis grandiflora.

VASES AND VASE PLANTS.

The use of vases in connection with terrace gardens becomes almost a necessity, and, in many cases, they form both an interesting and attractive feature when used in moderation, giving quite a finished tone to the terrace wall or balustrade, which was only needed to make the general appearance of the grounds complete. But too frequently, instead of half-a-dozen really noble-looking vases in which plants would flourish and would have an imposing effect, there are substituted fifty small ones, wherever the ingenuity of the designer could find a plea for placing them, and in which nothing but Aloes or Geraniums can exist. In the cultivation of plants in the open air the least experienced grower will acknowledge the necessity of protecting the roots from the scorching rays of the sun in summer and the action of frost in winter, by plunging (if in pots) and by mulching in open ground. But plants in vases, from their elevated and generally exposed positions, are calculated to feel the full force of both with the greatest severity. In the case of small vases, from the thinness of the stone and the small quantity of soil which they contain, the power of the sun's rays is so severely felt that it is a difficult matter to maintain the vitality of even the least sensitive subjects, as stagnant moisture is even more speedily destructive than drought. These contrivances may be termed plant-destroyers, for, when used on a large scale, nothing but a reserve stock of plants will suffice to keep them presentable. But really good vases are, when well furnished, attractions and valuable additions to any garden. They should, in the first place, be made sufficiently substantial for the sides to form ample protection for the roots of the plants against cold or heat, and should contain soil sufficient to retain moisture for several days when once thoroughly saturated. If these simple requirements be not provided for, together with good drainage, it is almost hopeless to expect a successful result. In the planting of Vases, the best results are generally obtained by individual taste in disposing of the materials at hand, rather than by any strict adherence to orthodox rules. But it is well to bear in mind that it is better to exclude anything from the arrangement altogether, even if a choice plant, unless it is well known to succeed in such a situation. A really healthy vigorous plant of Yucca recurva is far superior in effect to the best coloured Dracæna that is evidently *not* enjoying its position. But there is such a wealth of materials thoroughly adapted to the purpose in both foliage, flowering, and trailing plants, that it will not be for lack of suitable subjects if a successful result be not achieved. When vases are arranged in pairs, it is of course advisable to fill them so that they may not only match, but the effect will be greatly improved by contrast if alternate pairs be filled with such graceful plants as the Yucca recurva and Ivy-leaf Geraniums, and the next pair with erect stiff-looking plants as the variegated American Aloe and Scarlet Geranium, edged with trailers, as upon the thoroughly furnished look of each vase will depend success or failure in the decoration. To clothe the outer edgings effectively, a small wire to which trailing plants can be attached is necessary, for if allowed to be swayed by every wind that blows, they are very liable to receive injury from the sharp edges of the vase. J. G.

HARDY SPRING GARDENING.

On the choice of a suitable position, combined with a proper selection, will depend the amount of success that will attend our efforts in the cultivation and development of hardy spring flowers. If we take the Primrose, by way of example, we shall find that conditions suitable to its growth will suit such hardy bulbs and roots as Snowdrops, Aconite, and similar plants. I lately saw a bank under the shade of Filbert bushes completely carpeted with these earliest and loveliest of flowers; they had not been disturbed for years, and beyond the annual dressing of decaying leaves that fell on them in autumn and formed both a protection and a stimulant, they received no attention whatever. This is the condition under which we have the most profuse displays of Primroses in our woodlands; for neither under the deep shade of Evergreens, nor under full exposure to the elements, do we find such a vigorous development as in the plantations of deciduous trees and underwood, where they obtain nearly the full benefit of light until their season of flowering and leaf-growth is completed; and, as the shade of overhanging foliage increases, they ripen off gradually, and rest protected alike from heat, drought, or excessive moisture, until the autumn rains start them into active root-growth, and under their mantle of fallen leaves, they slowly but sturdily emerge into full life, ready to expand with the first rays of sunshine in early spring. In such positions the soil becomes completely carpeted with Moss and small herbage, so that the delicate blossoms are not splashed and soiled as in loose, freshly-dug soil; and they are screened from the withering effects of winds, which are even more trying to this class of plants than frost. Such positions cannot always be secured within the limits of the flower garden, but recesses or edgings of woodland walks, or connecting links between the cultivated grounds and woods may be rendered attractive, especially in the early spring, by the addition of such hardy roots or bulbs which, once established, will take care of themselves, and always yield a pleasing return. In the geometrical garden such hardy bulbs as Snowdrops, Crocuses, and Aconites are seldom very attractive in the spring, as they require to be in tolerably large masses to be effective, which can only be secured by providing an undisturbed root-ground; for this purpose I find no better position than that of utilising the broad bands of Ivy that now form so pleasing a feature in flower gardens, more especially those edged with stone or terra-cotta, for even if planted in small patches at first, they quickly increase in their congenial position, and when in bloom the effect is excellent from the contrast of the delicate blooms resting on a groundwork of dark foliage. In a band or edging of Ivy 18 in. wide, three or four rows of bulbs will have ample room to extend, and, when well established, will form quite a sheet of bloom, both flourishing under similar treatment. When the Ivy is clipped and pegged down in summer, a slight top-dressing of thoroughly decayed leaf-mould and soil will assist in keeping up a vigorous growth on both Ivy and bulbs. J. Groom.

Edgings for Flower Beds.—Allow me to inform "Edinburgh" (see p. 200), that, after trying many different plans, I have come to the conclusion that nothing is so good as rough stones placed upon, not sunk in, the ground. Box harbours slugs. Tiles act as a dam, and make the ground very sodden. With a little management rough stones look well, and the plants will trail over them.—H. N. Ellacombe, *Bitton Vicarage.*

A MIXED GARDEN.

The garden of which I am about to speak, says a correspondent of "The Gardeners' Magazine," is located in the midland counties, but I should be guilty of a breach of confidence were I to indicate its exact position. Its most striking peculiarity is the remarkable manner in which a large number of the most useful esculents are made to contribute to its adornment. The grounds are fairly enclosed, and not open to the inspection of those who pass along the road. Near the house is a breadth of turf, with a few beds of Roses round the outside, and beyond this are groups of trees, clumps of shrubs, and winding walks. The space beyond the breadth of turf is not very large, perhaps not more than half an acre, yet from the manner in which it is broken up by the groups of trees and shrubs it appears to be very much larger. In this part of the garden, which may be considered as an equivalent to the "wild garden" of a more pretentious establishment, B—— has developed what to me is quite a new idea in wilderness decoration. Round the boundary are clumps of fruit-bearing trees—here a clump of Apple trees, there a group of Cherries, yonder a knot of Pear trees, and so on. Planted in this way they do not give an orchard-like appearance to the place, and the principal objections that could be urged against planting fruit trees in pleasure grounds are cleared away. B——, who is unacquainted with the choicer kinds of flowering trees and shrubs, said to me, "The Apple, Pear, and Cherry trees are as pretty when in bloom as any of the trees that do not bear fruit of any value excepting to the birds, and I do not think the fruit which follows the flowers at all objectionable; in fact, I like to see it, and, as the few friends who drop in to have half an hour's chat or a bit of dinner enjoy as well as myself a good Apple or Pear, I do not see why I should not plant trees bearing fruit instead of those producing flowers and a few worthless berries, or that do not flower at all." I felt at the time, as I saw the Apple and Pear trees laden with fruit, and I feel now, whilst writing this, that the view of the the matter taken by B—— is not far from right, so far as a garden of small extent is concerned.

But the idea of B—— for combining beauty and utility is not confined to the fruit-trees, for on the turf are beds of Globe Artichokes, which in appearance are quite unsurpassed by any of the coarse forms of hardy vegetation, or, indeed, by any of the "sub-tropicals" so called; and from these beds an abundant supply is obtained throughout the season. Other beds are filled with Cardoons, also ornamental in their way, and with the little labour required for blanching the stalks, a considerable addition is made to the stock of vegetables available for the table in the late autumn and early winter months. I was at first doubtful as to the capabilities of the household for cooking Cardoons, but when B—— began to talk about boiling them first in clear water until the skin could be easily removed, and then boiling a second time in good stock and serving hot with rich brown gravy, my mind was soon set at rest upon this point, and I was sufficiently convinced that B—— knew how to have vegetables of the choicer kinds cooked as well as he did to cultivate them in a manner that whilst good crops were produced they were made to contribute to the interest of the garden. Quite at the back of the borders were large clumps of Jerusalem Artichokes, and although they are rather coarse, they are very bold in appearance, and with a foreground of shrubs and other plants of less stature they are not wanting in effectiveness.

One of the greatest surprises was the employment of the Asparagus as a decorative plant, and, disposed at intervals in clumps, it was wonderfully attractive, for in elegance of feathery spray it has but few equals, and when studded with its brilliantly-coloured berries its attractiveness is materially increased. The clumps were about a yard across, and I can well believe that in the course of the season there was no difficulty in obtaining a good dish whenever required. The Seakale and Variegated Kales were also planted at intervals, the former close to the edge and the others farther back. The glaucous leaves of the Seakale afford a striking contrast to the deep green and bronzy foliage of surrounding subjects, and a supply of excellent quality is obtained by heaping sand over the crowns and then putting inverted flower pots over these, and by lifting the roots, and after they have been put in boxes with a little soil about them, placing them in a cellar. Crowns that are not covered or lifted produce flowering shoots, which may be taken off before the flowers expand, and be cooked in much the same manner as Asparagus. I have eaten them several times, and thought them delicious; and by mentioning the fact to B—— I had no doubt I should be able to surprise him; but was very much taken aback by his saying, "Yes; the green stems are very good, and I like them so much, and they come in so useful before the Cauliflowers and several other good things, that I leave nearly half the Seakale crowns alone." B—— is also very partial—so at least he told me—to the Indian Corn cobs when cooked whilst young and tender, and served with a liberal quantity of butter. Of the table Maize there was consequently a number of clumps in the borders, and several beds also, and they certainly gave a tropical-like aspect to the place. Beetroot was necessarily represented, for it is one of the most ornamental vegetables we have, and when, as in this instance, groups of six or seven roots are arranged alternately in selected positions with the Seakale, the fine deep colour of the foliage is brought out to great advantage. Rhubarb was rather extensively planted in the more spacious borders, and the masses of green leafage were very attractive, much more so than might have been expected.

Scarlet Runners were planted in various suitable positions similar to those occupied by the Jerusalem Artichokes. and in doing this some amount of taste was shown; for when they are close to the eye they are rather coarse, but at some distance off the scarlet flowers have a bright and effective appearance. So far as I could see, the Beans were sown in a ring about 30 in. in diameter, and feathery Pea-sticks about 6 ft. in height employed for supporting the twining growth. These also presented unmistakable proofs of bearing abundantly. Tall Nasturtiums or Tropæolums were grown in a similar manner, but in positions more immediately under the eye. Along the front of some of the borders were patches of the dwarf Tropæolums. The Nasturtiums are grown for the sake of their bright flowers, and for the seeds, which are gathered when about half grown and pickled, to form a substitute for Capers. Martynia fragrans is also grown in quantity, as the fruit is very good when properly pickled. The Purple Orach formed a conspicuous feature here and there, for a few large clumps will furnish a plentiful supply of leaves for cooking as Spinach, and the plant is sufficiently ornamental to be sown in shrubbery borders, from which there may be no desire to obtain a supply of vegetables. The Gourds and Vegetable Marrows had a place assigned them on a bank in the wildest part of the garden. Some years before a large heap of pieces of stone, broken columns, and soil was formed, and I considered it a happy thought of B—— to clothe it with these rampant-growing subjects. "For many years," B—— said to me, "I did not know what to do with that heap of stuff, for it was always smothered with weeds, and had a most unsightly appearance, and helped to fill the garden with weeds. At last I made up my mind to plant Pumpkins and Marrows, and they have done all I expected of them in keeping down the weeds, and we have in addition plenty of tender Marrows in the summer and ripe Pumpkins for pies during the winter." The large sorts appeared to be preferred to the small and more delicate kinds, but it was evident that B—— prided himself on the size which both Pumpkins and Marrows attained. A warm sunny position on the bank, where it consisted almost exclusively of stones, was devoted to Tomatoes. These were planted between the blocks of stone where a sufficiency of soil could be found, and the shoots were allowed to ramble about over the stone without being stopped or in any way regulated, and, as was sufficiently evident, good crops are produced without the stopping and training considered so essential in their cultivation, and indeed necessary, when they are planted in a rich border at the foot of the wall. In the foregoing remarks I have merely glanced at the more prominent features of this curious garden; but it appears to me that much might be written in reference to the planting of vegetables of an ornamental character in the semi-wild parts of the gardens of limited extent.

Pond Weeds.—Would any of your readers give me the benefit of their experience in clearing a pond from Water Milfoil? I have a piece of water, some 3 acres in extent, that has become so choked up with it as to be unfit for either fishing or boating. What I should like is the experience of some one who has been successful in eradicating the pest, not mere suggestions; of these I have had too many already at serious cost, including dragging it out with grapnels, but the results have not been worth naming.—Lancastrian.

Formation of Gravel Walks.—If Mr. Edwards, of Bath (see p. 190), will make his gravel paths as follows, he will get rid of all the disagreeable matters of which he complains, viz.:—Set out and properly form the edges by digging, well treading, and levelling; then dig out the box (the technical name for the space between the edges) to the depth of 12 in., put in a 3-in. agricultural drain-pipe in the centre, 2 ft. under the "formation" level, for thoroughly underdraining the ground, and for carrying off surface-water from the paths, collected in small cesspools, covered with iron gratings 100 ft. apart, and placed alternately on each side of the walk, and communicating with the centre drain by 2-in. pipes. The path, when finished, should have a convexity of 2 in., so as to throw off the surface-water quickly, and the "formation" should have the same convexity. When the drains and cesspools are finished, lay upon the "formation" a good layer of fine brushwood, which will occupy a depth of 1½ in., when compressed by the weight of the other materials; upon this lay 6 in. of chalk, hard-core, burnt ballast, or coarse gravel. Well consolidate by means of a heavy roller, cover over with a layer of fine house-ashes 2 in. in thickness, which will obviate disturbance from worms, and finish off with 2½ in. of fine garden gravel, which, if laid on in dry weather, should be thoroughly soaked through with water before rolling. I have adopted the foregoing formula for twenty years, and the result has been all that could be desired.—X. Y. Z.

THE OXALISES.

Owing to the beauty of their flowers, several species of Oxalis make good bedding plants; some of them are also very sweet-scented, and of these O. odorata is one of the best; its flowers measure about half-an-inch in diameter, and in colour are a beautiful shade of blush-pink. For bedding, the most effective kinds are those that have large flowers, such as Boweana, which I have seen bedded out in Battersea. O. Deppei has flowers of a pinkish-lilac colour, about half-an-inch in diameter, and, as it flowers in bunches, it makes a good bedding plant. Its leaves have a dark stripe round the centre, something like those of tetraphylla; its bulbs are also similar to those of that variety. In addition to those named the following are all hardy and useful for bedding purposes, viz., arborea and its varieties, cormorensis, articulata, flava, digitata, floribunda (rose and white), pectinata, purpurea, and its variety laxula, latifolia, casiopetala, and its flesh-coloured variety, lactiflora, violacea, versicolor, tetraphylla, speciosa, spectabilis, Schilteri, and rubella. Of kinds generally grown in pots in the greenhouse, O. rosea is one of the best; it has flowers singly (not in bunches), over 1 in. in diameter, and bright rose in colour; in habit it is dwarf, with an abundance of pale green leafage. Other greenhouse varieties are compressa, lanata, rosacea, arborea lutea, rutilans, lasiandra, elegans, asinina, filicaulis, bifida, leporina, lobata, caprina, floribunda (rose), variabilis (red and white), cernua and its double-flowered variety, fragrans, venusta, Cervantesi, grandiflora rosea, hirta rosea, and hirtella. For bedding out, those that flower singly are preferable to those in bunches. I never remember seeing a better substitute for the beautiful Leptodactylon californicum, which I once saw in perfection at Shrubland Park than O. Boweana. R. H. B.

Oxalis rosea.

Oxalis Deppei.

Oxalis Valdiviana.

Sisyrinchium grandiflorum.—This is my favourite spring flower—a lovely mauve-purple. It seems to like a north border. Few people know it.—Fraxinella.

Griffinia ornata—This is described as a very ornamental species. It was imported from Rio, during the past season, by Mr. Bull, with whom it has been in flower during the winter. It is distinct from the older and better known members of the same genus.—Q.

THE KITCHEN GARDEN.

CULTURE OF BROCCOLI.

Either Broccoli or Cauliflower may be had fit for use every day in the year, and where these are consumed on a large scale, a good plantation of winter and spring Broccoli is valuable. In the moist atmosphere of Lancashire, with its dense smoke and clay soil, cultivators are put to their wits' end to find out the best way to procure a supply of Broccoli from January to the end of May, when early Cauliflower begins to come in. To accomplish this I have had recourse to many expedients, but I find the following system to answer best :—The seed should be sown thinly in drills at the beginning of April, and as soon as the plants can be easily handled, the best of them should be drawn out of the seed-bed, and replanted on a well-prepared border, trodden solid, from 8 in. to 10 in. apart. As soon as they have attained a fair size, and have become well rooted, a spade should be run down the centre between each row, cutting the roots in such a way that each plant may be lifted with a good ball attached to it. Any extra labour incurred in this matter is afterwards well repaid, as it tends to keep the plants dwarf and bushy. During the autumn or winter months, according to circumstances, the ground to be planted should be trenched two spades deep, and in the bottom of each trench should be placed some half-rotten manure, consisting of old Pine stools or other refuse of a rough character, which will keep the soil open, and which will form good drainage, without which our labour will be in vain. The surface should be left in a rough state until planting time, when, if the weather be favourable, 2 or 3 in. of good rotten manure spread on the surface should be worked in with a four-pronged fork, leaving the ground level. Before planting, tread quite firmly, and allow plenty of room between the rows. In small gardens where ground is scarce, and too thickly planted, the whole bed has to be sacrificed in the winter. With Broccoli and surface-rooting plants care should be taken to use the hoe in as shallow a manner as possible, in order that the roots may sustain no damage. About the middle or end of October, according to the state of the weather, an opening should be made along the side of the outside row; the plants having been cut round with a spade, should then be turned over on their sides, the head falling northwards, and amongst the roots should be placed some light manure, such as that taken from the top of the Vine borders, mixed with short Grass, the whole being covered over with soil. The manure in a short time will be found full of white roots, which strengthen the plants against severe weather, and cause them to produce finer heads than they otherwise would have done. I have tried the soiling up system, and have placed litter between the plants, to protect them from cutting winds, but nothing answers so well as the heeling-in system. I have generally found when the plants have to be removed from where they have grown, that they stand the winter well, but that they never make such fine heads. As regards varieties, every one has his own favourite. I find the following to stand best (but I should state that I have not grown several of the newer sorts):—Backhouse's Winter White, Knight's Protecting, Wilcove's Late White, and Brimstone or Portsmouth; the latter stands the best of any which I have grown.

Waterdale, St. Helen's, Lancashire. James Smith.

HEELING-IN BROCCOLI.

"A. D." stands completely alone in condemning this practice; cultivators would dispense at once with the labour of heeling-in the plants in autumn were it not imperative. I have tried both ways, and seen others do the same both in England and Scotland, and always with the same result. The check given by heeling-in, if done in time, say not later than the end of October, hardens the tissues, and in this lies the whole secret of the matter as resistance of frost is concerned. "A D." may just as reasonably say that an ill-ripened Peach shoot is as safe in a severe winter as one that is well ripened. He says if heeling-in be done, it should be done at the end of August. Is he not aware that in many places Broccoli is not planted till near the beginning of August, and that the plants grow almost as much in September and October as at any other time? For this reason, we never heel-in here (in South Yorkshire), till the end of October, and after that period the plants not only root sufficiently to get established again, but grow considerably. S. W.

For these seven years past my Broccoli has been planted after Strawberries, the only preparation being to cut up the Strawberries and plant the young Broccoli plants with a crowbar. The soil being solid appears to suit them well. They grow dwarf and sturdy, and are short-legged; if the weather be unusually sharp, we cover them up with Bracken, which is light and airy. By these simple means we are rewarded with a bountiful supply of good Broccoli from early in winter to the end of May. R. Gilbert.

Common Errors in Celery Culture.—It is not my intention, says a correspondent of the "Florist," to enter into the details of the ordinary culture of this useful vegetable, because they are well understood, but to notice three common errors connected with its growth. The first I will mention is that of sowing too early. Although Celery is a biennial, yet when the seed is sown too soon—say the 1st of February—and the plants are nursed a little, they are very liable to "pipe" or run to seed; while those raised from seed sown about this time of year seldom do so. The second error is that in earthing up the plants too much soil is applied at one time, by which the hearts are covered in, and they are thus made to bulge out on one side, and become deformed; whereas, when the operation is more lightly done, as well as oftener, the heads are kept upright, and the growth is much more vigorous. The third error I have had to notice, and which is, perhaps, the worst, is "earthing" or banking up the crops too heavily in autumn or before winter sets in; this is a very common practice, especially among cottagers, who often cover their Celery over head and ears, if I may so express myself. This, moreover, is done with a view of keeping out the wet and frost from the crops; but in such cases the Celery fails to grow from want of air; in fact, as already indicated, the plants are buried, and they soon become rotten; and, though the wet weather may be blamed for this, it may even happen when the ridges are covered with litter or boards. Formerly I used to fall into these errors above mentioned; but now I earth up my Celery more sparingly, taking care that the leaves or tops of the plants are well above the ridges, especially in the case of late crops. Hence I have had no reason to complain of my crops rotting, however damp and severe the winter may have been. Those who protect the ridges to fence off the weather, seem to overlook the fact that the means employed for this purpose prevent the escape of moisture by evaporation of the earth, in consequence of which the crops are more apt to rot than if their tops had been freely exposed to the air.

Planting Asparagus.—I always plant my Asparagus in single rows, 3 ft. apart and 18 in. from plant to plant. It is convenient for cleaning, gives the roots room to spread without interlacing or struggling with each other; and, although the plants are planted on the flat, an annual top-dressing with manure over the crowns, and the treading between the rows, cause the latter to assume the form of a ridge, which tends to throw the rain off the crowns, and prevents stagnant water at the most vital point; moreover, to have good Asparagus, it is essential that the early growths are not broken over by high winds. When such is the case, the later growths do not come so strong, and also lose time in coming to maturity. The above distance will not be found too wide to allow strong Asparagus to develope itself. Another point should be attended to where strong Asparagus is grown to be forced, that no seed should be allowed to swell on the plants—certainly none allowed to ripen. This is as essential as cutting the flowering shoots off Seakale or Rhubarb.—W. D. C.

The Calabash or Bottle Gourd (Lagenaria vulgaris), figured (see p. 209), is eaten by the poorer classes in India. The young fruit may be seen exposed for sale in slices in every market, and by vendors on the road-sides. When dried, the hard shells are used as bottles for holding water, &c. A variety of it is employed to make the stringed instrument called the Sitar; and also for floats and buoys for swimming across rivers. Some are elongated, and 1½ ft. in depth, while others are nearly round. A half-shell is also used as a dish for meat, rice, and similar material.—J. P.

Raising Seed in the Dark.—Sow the seeds in the usual way, cover up and keep in total darkness until they begin to peep above the soil, then gradually expose them to the light. For years past excellent articles have been written, advising shading seed-pans with paper, various coloured glass, &c., none of which methods approaches this system in merit, and why it has not become a general practice long since I am at a loss to say. The advantages and success of this system are so apparent that it only requires to be once known to become universally adopted; when a frame is covered with mats it ensures uniform moisture and temperature, consequently every seed possessing life will be sure to grow.—H. Cannell.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

March 1st.

At this meeting, which was well attended, the most attractive features were beautiful groups of Orchids, Ferns, Palms, and other valuable stove plants, contributed by Messrs. Veitch & Sons and Mr. B. S. Williams. A very fine specimen of Phalænopsis Schilleriana came from Mr. Bass's garden at Rangemore, near Burton-on-Trent, to which the Committee recommended that the Davis medal should be awarded, on account of its superior culture. Mr. Bull furnished a beautiful double-white Epacris; and Mr. B. S. Williams showed one of the finest strains of fringed Chinese Primroses that we have yet seen.

First Class Certificates.—These were awarded to the following new and rare plants, viz.:—

Grevillea Prassii (Rollisson).—This is a distinct Australian species, which, as far as general habit of growth and glaucous hue are concerned, reminds one of the common Southernwood (Artemisia Abrotanum), each shoot being terminated by a cluster of bright rosy-crimson flowers. It is well worth attention as a decorative pot-plant.

Epacris onosmæflora fl. pl. (? E. impressa) (Bull).—This is an erect growing plant, of strong habit with long decussate sharp-pointed leaves, of the deepest green imaginable. Its flowers measure about ¾ in. in diameter, and are as double as those of a white Camellia, the colour being pure white. It is a valuable addition to Epacrises, and one which will be largely grown, even by those who as a rule eschew the culture of hard-wooded New Holland plants.

Orchids.—Of these Messrs. Veitch contributed a large group, in which the following were particularly worthy of notice, viz., Masdevallia nycterina, one of the most grotesque of all Orchids, but by no means a showy one; Lælia harpophylla, a distinct species nearly allied to L. cinnabarina, and, like that kind, having vermilion-coloured flowers, but it is much more slender in its habit. Associated with these mere Dendrobium amethystiglossum, a tall-growing leafy species, bearing pendent racemes of creamy-white flowers, having a delicate amethystine blotch on the lip; Angræcum citratum, one of the most delicate of all the species belonging to this genus, bearing long slender spikes of creamy-white flowers; Vanda cœrulescens, a little gem in its way, bearing one spike of bluish-purple-lipped flowers, and a new Odontoglot, seemingly intermediate between O. Alexandræ and O. gloriosum. Its flowers are exquisitely formed and very delicately coloured, somewhat in the way of O. Andersonianum. Among other Odontoglots were O. Rossii majus, O. Roezlii album, and O. triumphans, the latter bearing a long flexuose spike, furnished with nineteen flowers; also O. Alexandræ and O. Pescatorei, the latter having a fine branching spike, bearing seventy-four pure white purple-dotted flowers. Among hybrids in this collection we noted Cypripedium Harrissianum, with dark greenish flowers; Dendrobium Ainsworthii, an hybrid between D. nobile and D. heterocarpum. This plant was first raised and exhibited by Mr. Mitchell, gardener to Dr. Ainsworth, at Lower Broughton, near Manchester, and since raised from seed by Messrs. Veitch, from the same parents, a fact of some importance to hybridists. The same firm also furnished Lælia flammea, a cross between L. cinnabarina and L. Pilcherii, bearing orange-coloured flowers; a plant of Ada aurantiaca, bearing five spikes of vivid vermilion-tinted blossoms; and some other Orchids, among which were Dendrobium crassinode, D. Wardianum, D. lituiflorum, D. formosum, and Phalænopsis Schilleriana, and intermixed with the whole were some very graceful dwarf Palms. In Mr. B. S. Williams's group we remarked Calanthe Turnerii, Cypripedium Dayii, Ada aurantiaca, Helcia sanguinolenta, and other choice species. Two strong and well-bloomed plants of Odontoglossum Alexandræ were shown by Mr. Ollerhead, gardener at Wimbledon House; one bore three spikes, on which there were in all thirty-four flowers; the other one spike, on which there were twelve very finely-coloured blossoms.

Miscellaneous Plants.—Mr. B. S. Williams showed a choice collection of Ferns, fine-foliaged plants, and Palms; among the Ferns we noted Ceterach aureum, a strong pinnate-leaved kind, nearly allied to C. officinarum and Adiantum gracillimum, the lightest and most fairy-like of all Ferns. Other plants consisted of the white-striped Anthericum variegatum, a plant closely resembling Pandanus Veitchii in habit and variegation; Bertolonia Van Houttei, and Habrothamnus elegans variegatus, two well-bloomed examples of Eucharis grandiflora, and two or three vivid scarlet Amaryllids. From the same exhibitor also came a dozen well-grown plants of Chinese Primrose, the colours of which were rich rosy-purple and pure white, the individual flowers being nearly 2 in. diameter and elegantly fringed. Messrs. W. Rollisson & Sons, of Tooting, furnished a basket of the sombre-looking, but deliciously fragrant, Boronia megastigma; also a new and unnamed Alsophila, from the West Indies, and a fine mass of Erica herbacea in full flower. Mr. G. F. Wilson contributed two new seedling Hepaticas—one a vivid magenta, the other suffused with the faintest blush; also a lance-leaved Goodyera from North America, having white reticulations on the leaves like those of Arum italicum. Mr. Ollerhead sent a double-spathed Anthurium Scherzerianum. A basket of very beautiful and fresh-looking hardy Primroses came from Mr. R. Dean; among these were yellow, lilac, white, puce, crimson, purple, and maroon-coloured varieties. Mr. Herbst, of the Richmond Nursery, furnished well-grown examples of Lily-of-the-Valley and Spiræa japonica, both of which were much admired. Of the former one batch consisted of Dutch-grown roots, the last being very dwarf and in every way the best. Col. Trevor Clarke showed flowers of Iris stylosa, a mauve-tinted species with larger blossoms than those of I. Histrio, also examples of the rich purple-golden blotched I. reticulata, and flowers of an early form of the summer Snowflake (Leucojum); likewise flowers of Cyrtanthus pulchellus, a white-flowered Cape bulbous plant, the flowers of which are very slender and tubular.

Fruit and Vegetables.—Among fruit, was a dish of the old Colmar Pear, from the Society's garden at Chiswick, and Mr. Dixon (Holland House) sent a dish of Stone Pippin Apples, in excellent condition. Examples of black-coated Radish-shaped Turnips came from Mr. Thomas Maclure, The Gardens, Hartley Grange, Winchfield. A seedling Cucumber, named "Drayton Manor," came from Mr. Owen Thomas, gardener to Sir R. Peel, Drayton Manor. It was said to be a cross between Telegraph and Masters' Prolific, but it was not considered sufficiently distinct to deserve a certificate.

Golden Chickweed and Golden Thyme.—I saw this Chickweed in one or two places last summer in good condition; but I confess that, with me, in spite of a good deal of trouble taken with it, it was not satisfactory. I expect it requires to be planted early in the season, in a rather damp position. Except for the sake of variety, it is hardly so effective as the Golden Pyrethrum. With the Golden Thyme I am pleased. Our dry porous soil seemed to bring out the rich golden tint to perfection, and it bears cutting with the shears without looking ragged or stumpy. Some thousands of little pieces, dibbled thickly in cold frames in October last, are now well rooted.—E. Hobday.

Watering Indoor Plants with Ice-water.—At p. 170 it is stated that, "Two writers in the 'Revue Horticole' contend that the common practice of watering stove and greenhouse plants with tepid water is wrong. They consider they actually get a much better result by using the coldest water within reach." Permit me to remark, that neither M. Rougier Chanviere's nor M. Henri Truchot's assertions on this subject are corroborated by proofs. They have not made comparative experiments on the same plants, and for the same length of time, with cold and tepid water, which, in my opinion, is necessary to prove that the one is better than the other. Besides, M. Rougier Chauviere's plants are grown for sale; they never remain long in his possession, and he cannot say what they become after he has sold them. M. Henri Truchot has, for a few days only, watered some of his plants with ice-water, and he cannot yet say what will be the result. I therefore maintain that the experiment is insufficient, because it has not been made comparatively. Plants, like animals, may live for some time under bad treatment, without showing signs of ill health, but that does not prove that the treatment is good. Those who grow vegetables for market about Paris, when they see the approach of rain in summer, hasten to the pumps of their wells and water their salads with cold water. Why? Because the rain would make the salad plants run up to seed, which the cold water checks. Is this a proof that cold water is good for vegetation? I hope that the matter will be better tested before horticulturists consider that it is settled.—Jean Sisley, *Lyons.*

NOTES AND QUESTIONS—VARIOUS.

Spurge Laurels for Undergrowth.—These should be cultivated more extensively than they generally are especially by those who prefer sweetly perfumed plants to glaring colours. They flourish well under the shade of tall trees, and form excellent edging plants for shrubberies.—J. Groom.

Camphorated Spirits of Wine v. Mealy Bug.—These I find destroy mealy bug, and by reducing the spirit's strength with water the most delicate-foliaged stove plants may be operated on without injury. It, however, requires careful and frequent attention to get rid of this pest, and the mixture is best used with a soft brush or a small piece of sponge tied to the end of a stick and washed on as softly as possible.—W. T.

Pear Ripening.—I should much like the opinion of fruit-growers, more particularly those in midland and northern districts, on this subject. Beurré Rance, Bergamotte d'Esperen, both usually very good, this season do not ripen kindly, a circumstance which I attribute to the sunless summer last season. Earlier varieties have been fairly good, but still not up to the average. —R. Gilbert, *Burghley.*

Primula denticulata and other Early Kinds.—I have a good plant of this pretty early Primula in full bloom, and ere it has ceased flowering it will have produced fifteen or sixteen heads of blossom. It has already been in bloom for a month, and I anticipate that it will continue flowering for the next three months. It would appear to be the earliest of all the hardy imported kinds. Two other varieties, specially alluded to by Mr. Niven—purpurea and pulcherrima, are also showy flowers, the former having two strong trusses. P. pulcherrima has coloured foliage, and is a very distinct kind.—D.

Royal Bouquets.—At the State Concert which took place the other day at the Albert Hall, Her Majesty's Bouquet, furnished by Mr. Wills, was composed of Roses, Eucharis, Odontoglossum Alexandræ, the chaste and beautiful Cœlogyne cristata, Violets and Lilies of the Valley; that of H.R.H. the Princess of Wales contained Neapolitan Violets, the lovely Dendrobium Wardianum, Lilies of the Valley, and other valuable flowers; and that of the Princess Beatrice, various Orchids, Lilies of the Valley, Eucharis, and Lilac—the whole being surrounded by Brussels lace-holders.

No. 225.] SATURDAY, MARCH 11, 1876. [Vol. IX.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

LARGE SEEDS BEST.

It may be stated, without fear of contradiction, that few experienced cultivators are unaware of the fact that the brightest, largest, or heaviest, and newest seeds are, as a rule, the best and the most likely to produce the finest crops. This is an important fact, and one which, we can easily believe, is too often overlooked, even in these days of high culture. It is a matter, however, which concerns the seed-grower more than the seed-sower. The latter must take the seeds as he gets them; and, though he pays for both large and small, he can, if he likes, in the case of the larger seeds at least, such as Beans and Peas, Melons and Cucumbers, &c., put the small ones aside, but, with the great majority of his crops, any advantage he might gain by so doing would not recoup him for his trouble and expense. It is quite different with the seed-grower; it is his interest to grow a good article, and large seeds pay him best—such as are sold by weight, at all events—and the greatest bulk is sold in that way. Nearly twenty years ago, when we grew Calceolaria and other select seeds for the market, we realized the truth of this statement. It was a noticeable fact that weak varieties and weak plants, or plants with small flowers, generally produced the smallest seeds, and we soon discovered that it was really a question of culture whether a thousand plants, for sample, produced 8 ounces or 12 ounces of seed, for which "the trade" allowed from £8 to £10 an ounce. In growing the plants, the principle that old seed was the most productive was not acted upon; but newly-ripened seed was sown annually, which produced vigorous plants, and they in their turn threw up vigorous flower-spikes, which bore large flowers that produced large pods, crammed to bursting with glistening, heavy seeds that told a tale when put into the scales. Now, the Calceolaria is no exception, for it is just the same with all the seeds with which we crop our kitchen gardens, or furnish our flower borders. The gardener can always, to some extent, make up for want of vigour in his seedlings by generous after-treatment, and it is hardly credible how much can be accomplished in this way; nor must we forget that a poor seed-bed will never furnish strong plants, let the seed be ever so good; but it is a great matter to have good, heavy, and well-ripened seed to start with, for other things being equal, it will always give the best results. But is high culture the rule with seed-growers? Are our vegetable and flower seeds as large, and even generally as they might be? On this point we have grave doubts. The seed-grower's name may be said to be legion, if we include private growers of specialities, who claim to have good strains of certain subjects; but do they always "select," or do they only "save" their seed? It is to be feared that seed-growing, like many other matters, will always be a question of production with the least amount of expense, as regards those seeds which are in most demand, but with many garden seeds, such as Peas, Beans, Kidney Beans, seeds of the Brassica tribe, Melons, Cucumbers, &c., a certain amount of care in the culture of the plants and in the selection of the seeds is quite practicable, and would no doubt pay in the long run, for there is nothing more certain than that when a member of the trade becomes noted for a "good strain" of any particular plant, he is sure of customers. It is difficult for the sower to know the qualities of his seeds generally by mere examination, unless he has considerable experience, and even that will not always help him; still the practised eye, with, in some cases, the assistance of the microscope, notes certain indications, which generally guide the cultivator to pretty safe conclusions. It is first of all necessary to know the seed of any plant when one sees it; and, secondly, to know a mere empty husk from a real seed: this knowledge is most needful in regard to flower seeds, for of the more select plants a considerable amount of indifferent seeds are sold. Only lately we had a packet of So-and-So's "superb Cineraria seed" sent us, price 5s., and on examining it with a glass scarcely a single Cineraria seed could be discerned in the packet. It was returned, and a better article was at once forwarded, with the assurance that the first packet was sent as received from the grower, which we do not doubt. A grower who supplied seeds of a certain popular succulent some years ago at a shilling a pod, sent pods containing only empty husks, which were returned, the dealer admitting the "mistake." Last summer we received seeds of a certain "Superb" Broccoli, which produced Charlock principally, showing how carefully "selection" had been conducted. Such cases, however, it is but fair to say, are exceptional, for seedsmen do their best generally to supply the best article procurable. The only way in which a sower can select his seeds, in the majority of cases, is to thin out his seed-beds early to the best plants. The strongest plants will soon show themselves, and in garden culture much is gained by selection at the thinning period. In the case of early Turnips, for example, there is often an extraordinary difference in the seedlings as regards vigour, and if the strongest are left they will be fit for use a week or more earlier than the others would have been. It is the same with all the Brassica tribe, with Carrots, and notably with Seakale, the seed of which varies much in size; in fact, it is quite easy to select it before sowing, and it is often done. Kidney Beans should always be selected, as there is no occasion for sowing them thicker than the plants are desired to be. The seeds of different varieties vary much in size, but it is easy to tell the good seeds from the bad in any particular sort, and both the small and deformed should be put aside. The same advice applies to Broad Beans—plant the largest. It is well known that improved varieties of such esculents, as often as otherwise, originate in careful selection, which should be followed up annually, or the strain may degenerate the same way in which it came. While inculcating the importance, however, of selecting the largest seeds, or of thinning to the best plants, let it not be forgotten that generous culture, as has been already stated, will to a great extent compensate for want of vigour in the seedling. A poor or uncongenial soil in the seed-bed will spoil all. The seed itself is only intended to afford the young plant temporary sustenance, and unless the young rootlets can find other means of support readily as soon as they begin to push, the plant will be simply starved. This is frequently illustrated in the seed-bed, particularly if thickly sown, the plants at the outside of the bed always being by far the strongest, for the reason that they have access to a more abundant supply of food than those in the centre, whose roots interlace each other so thickly that they soon exhaust the thin stratum of soil in which they grow. Plants sown in drills hardly suffer in this way, their roots having room to extend laterally. It is an excellent practice to sow all seeds which have to be transplanted in drills. It takes but little more room, and is more than compensated for by the vigour of the plants and the time saved in thinning. Broccoli, Cauliflower, Lettuce, Stocks, and Asters, &c., that sometimes cannot be transplanted at the proper time, are frequently injured by being left in the seed-bed too long, for they begin to suffer almost as soon as they have passed the seed-leaf stage. Another question of some practical importance regarding the qualities of seeds, is the belief very commonly entertained that new seeds, as in the case of the Melon, Cucumber, Gourd, Tomato, and other annuals grown for their fruit are not fruitful, the common notion being that they run too much to bine. Many practitioners, if they cannot procure seed old enough, will carry the new in their pockets for weeks, or lay it on a mantel-piece above a fire in order to weaken its vitality, in the belief that they thereby ensure a better crop of fruit. Now the only effect such treatment of the seed can produce is debility, more or less, in the plant, and the question is, is a weak plant likely to produce either more or better fruit than a strong one? We think not. We have tried old and new seed separately, in the culture of the Melon, and our constant experience has been that the old seed produced fruit a little earlier perhaps, but considerably less of it, while new seed produced plants which, if allowed to extend themselves, bore both freely and abundantly, and often a second and third crop, which old seed has, as a rule, not the strength to do. For these reasons we have for a long time preferred new seed to old, and have never had occasion to alter our opinion in the matter. It is highly important to get vigorous seedlings, and if a gross habit be suspected in any variety, the cultivator has ways and means of checking it without staking his chances upon old and perhaps worthless seeds. It has been already hinted how weak seedlings can be invigorated by generous treatment, and so over-luxuriance may be checked by the opposite treatment. The strongest-growing Cucumber or Melon may be absolutely stunted by growing it in a pot, or in a poor soil firmly beaten. Generally speaking, however, the secret of growing Melons is to grow them on the extension system, to give them both root-room and top-room, in order to get a good breadth of wood and foliage, and then to crop heavily. CHEF.

VIOLETS AND THEIR CULTURE.

FEW plants are more appreciated at this season, both by rich and poor, than Violets, and few are, as a rule, more neglected. A few half-starved plants of them may here and there be found in some out-of-the-way corner, where they are often allowed to dwindle and die from want of support. As Violets are found so abundantly in woods and by the sides of hedgerows, few imagine that they require a generous soil, or that they are improved by good cultivation. In preparing a bed for them, the soil can scarcely be made too rich, provided it is open and well drained, and under such conditions there need be no lack as to quantity or quality of bloom. They thrive well on a moderately heavy rich soil; if it happens to be light and gravely, some stiff material and plenty of manure must be added to it, and if poor and hard clay, it will be benefited by the addition of some sharp, gritty matter, and abundance of rotten manure. Aspect, too, is quite as important as the proper preparation of the ground. Violets require shelter, but not that of a wall. Their natural shelter is a hedge-row, in which they get currents of pure air, which are so essential for keeping down red spider, and for maintaining the foliage in a healthy state. In town gardens, and in gardens surrounded by high walls, they are seldom healthy. They grow well on the north or north-east side of a Hornbeam hedge, provided it is somewhat naked at bottom, so as to allow the sun to shine on their leaves early in spring, and also afford a partial shade in summer. When, however, the soil is deep and rich, they will bear a considerable amount of sunshine without injury. It is well to have a few plants of them in different positions, so as to ensure a succession of bloom. On south borders they dwindle and die; but a few roots on sunny banks will produce some early pickings. Violets of all kinds are easily increased by means of cuttings made from stout short runners, rejecting all that are wiry and hard, and they should not be taken from plants that have grown in pots or under glass. The cuttings should be taken off the first week in April, if they are intended to bloom next year, put under hand-lights on a shady border, and kept close until they have begun to grow, when the lights may be tilted a little, gradually increasing the space, until at last they may be wholly dispensed with. By September they will be ready for transplanting, when they may be planted in beds 4 ft. wide, three rows in a bed, 1 ft. apart. This will afford space to hoe between the rows while they are growing. They will soon spread and fill the beds; but they must not be allowed to remain more than two, or, at the most, three years in the same place, or the flowers will become small and short-stemmed. If they are permitted to remain more than two years on the same piece of ground, they must either receive liberal top-dressings of rotten manure, or copious applications of manure-water. Another mode of propagation, which is, perhaps, attended with the least trouble, is as soon as they have done blooming, to get a few large plants and tear them into as many pieces as possible with a little bit of root attached to each. This is how I always propagate my Violets, and those I had planted last April covered the ground long before autumn, and since October, when the weather has been mild, they have afforded ample pickings. Little pieces without roots may be placed under hand-lights and treated the same as cuttings. Of varieties perhaps the Russian is the most popular. In warm sheltered corners it will begin to bloom early and continue to furnish flowers even during severe weather; the Czar, which is an improvement on the Russian, has flowers of a deep blue colour, of great substance, and supported on stout foot-stalks, 8 or 9 in. long. I re-plant a portion of this variety every spring. The newly-planted beds begin to bloom the first week in October, and we have a succession of flowers all the winter. I at one time grew the Queen, a white variety, which I have long since discarded on account of paucity of bloom. For general purposes there is no better white than the single hedgerow kind, which improves very much under cultivation. R.

NOTES OF THE WEEK.

—— THE collections of Camellias and forced Hyacinths in Messrs. Veitch's nursery at Chelsea are at present well worth inspection. Orchids, too, are just now very attractive, numerous beautiful forms of Dendrobium Wardianum, and D. crassinode being in full flower. The rare and distinct Phalænopsis Veitchii is likewise bearing a spike of lovely rosy lilac blossoms, the three-lobed lip being of a bright rosy crimson tint, set off by a golden crimson-spotted crest. The leaves, which resemble those of P. amabilis, are faintly marbled with grey.

—— CYPRIPEDIUM SPECTABILE and C. (acaule) humile, both natives of North American woods and marshes, are now flowering freely in Mr. Bull's nursery at Chelsea, the former having white petalled rosy-lipped flowers, and the latter purplish blooms. Both species, though perfectly hardy, are found to bear forcing well, and their flowers are fresher and even more interesting indoors than in the open border.

—— MR. BARR's bulb and hardy plant grounds at Tooting are now beginning to be interesting. During the past week several distinct varieties of Narcissus Pseudo-Narcissus have opened their golden flowers; Scillas, Primulas, Hepaticas, Iris reticulata, and many new and rare species and varieties of Crocus are also in bloom. The beautiful rich purple Sisyrinchium grandiflorum is showing colour, and a bed of Cyclamens, including C. vernum and C. Atkinsii, is a mass of magenta, purple, and white flowers, and beautiful fresh-looking leaves, marbled with grey. These are quite as interesting as the Persian kinds under glass, and, being perfectly hardy and of easy culture, deserve a place in every garden.

—— As it appears that seeds of common Chicory or Barbe de Capucin are often sold for those of Witloof, the two being asserted to be one and the same thing, perhaps the following account of the Barbe de Capucin and Witloof, taken from the last issue of the "Flore des Serres," may be of service:—"Every one knows Barbe de Capucin, the common salad of the Paris markets, and which is produced by common Chicory. In the latter, the roots are slender and not thicker, as a rule, than a blacklead pencil, terminated by long, narrow, white leaves, 8 in. or more in length. In the Witloof, on the contrary, the root is short and thick, and bears a mass of erect, broad, thick, imbricated leaves, forming a small elongated solid heart, which reminds one of the heart of a Cos Lettuce. Except in the mere fact of being blanched, the Barbe de Capucin and Witloof are in all points the opposite of each other; length and slenderness on the one hand, and shortness and bulk on the other, they present to us the two extremes of the series of blanched products which can be produced by the Wild Chicory."

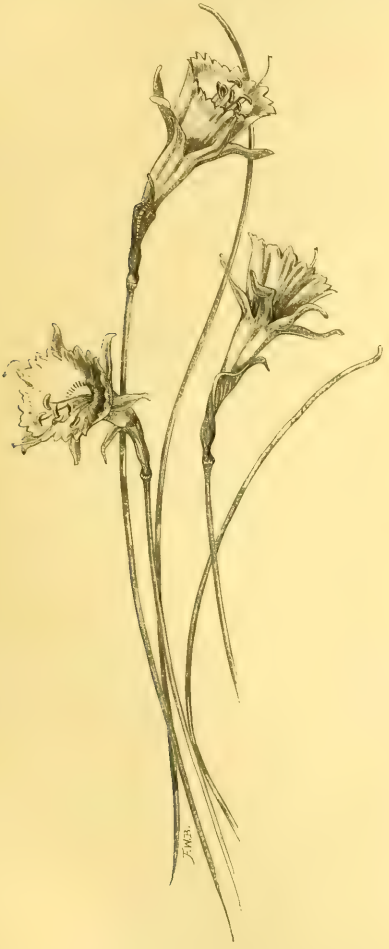
—— THE following history and mode of culture of the fine plant of Phalænopsis Schilleriana, which was exhibited by Mr. Bass, at South Kensington, the other day, and to which a Davis medal was recommended to be given, have been forwarded to us by Mr. Bennett, Mr. Bass's gardener at Rangemore. The plant, he says, was sent from India about three years ago by Mr. Bass's daughter, a lady who takes much interest in horticulture, along with a collection of other Orchids. They were badly packed, so much so that out of twenty-seven Phalænopsids only six arrived alive. The one in question had one leaf, about 3 in. long, quite shrivelled up, and two roots broken off. Immediately upon unpacking, they were hung up on the back wall of a north house, some garden mats being put between them and the wall. These, from being regularly syringed, kept the plants moist. Several blocks of Mahogany having been sent over with them, the Phalænopsis was placed on one; and, as it began to root after being on the back wall for six weeks, the end of the block was put in an 11-inch pot, filling up the pot and making the block fast in it with crocks and some lumps of fibry peat, the top of the pot and the whole of the block being covered with live Sphagnum. The first season the plant sent up a weak flower-spike; the second year the roots made great progress, running down the block and all among the crocks and peat, and the plant made two leaves 13 in. long and 5 in. wide, and in the spring threw up two flower-spikes, bearing between them 100 flowers. The peat was then, as far as possible without disturbing the roots, picked out and fresh material added, and last season the plant made two more leaves 1 ft. long and 5 in. wide each, and showed two more spikes of bloom, but, owing to the leaves not being quite so long this season as last, only one spike was left. The present spike is 5 ft. long and 3 ft. across, and the plant measures, including the spike, 6 ft. 2 in. high. There are nearly eighty flowers on the spike. The block stands about 15 in. out of the pot, the plant being on the extreme end of it. The temperature has been, during the autumn and winter months, from 60° to 65° at night, with a rise of 5° by day, the summer temperature from 70° to 75° at night, with a rise by day, and plenty of moisture.

THE FLOWER GARDEN.

WHITE-HOOPED PETTICOAT NARCISSUS.

(N. MONOPHYLLUS.)

THIS is one of the most beautiful of Daffodils, and one which would soon become popular were it a little more easy of culture than it is. Mr. Barr has just bloomed it in a cool frame in his bulb grounds at Tooting, and from flowers furnished by him the accompanying sketch has been made, but no woodcut illustration can do justice to the crystalline whiteness, the spotless purity of its flowers, which, like those of many of its allies, preserve their beauty long after they have been cut and placed in fresh water. Imported bulbs of it flowered at Kew in January, 1870, and from these the figure of it in the "Botanical Magazine" was prepared. Mr. Barr's plants differ from the Kew specimens in having the smaller and more elegant chalice-shaped flowers borne on much longer rush-like scapes, and in the leaves being much longer and more slender, but all the figures and specimens of it which I have seen go to prove that this plant, like its yellow-flowered allies, is a very variable one. Mr. Baker makes it a variety of the common N. Bulbocodium, but others think it deserving of specific honours, although the distinctive characters, such as the single leaf and broader perianth segments, are too variable to be relied on. Bulbs of this plant, gathered by Mr. Munby in Algiers, and placed in his herbarium, were found by him to still retain their vitality, and, after a lapse of twenty-two years, upon being potted and placed in a greenhouse temperature, they grew freely. This plant has evidently been known to English cultivators for over two centuries, and it is not a little singular to find that the old authors who describe and figure the White-hooped Petticoat Narcissus, make no allusion to its being more difficult of culture than its allies. "This beautiful little gem," says Mr. Munby, "seems to be rebellious to all the modes of cultivation which I have been able to employ. Hot-bed, greenhouse, open air—all seem alike to fail. I saw last year, at Messrs. Backhouse's nurseries at York, 150 potfuls of it plunged in ashes, each containing one bulb, and amongst the whole I perceived only a solitary leaf. Messrs. Barr & Sugden have, until lately, been equally unsuccessful. Mr. Tyerman, of Tregony, has informed me that he has succeeded in forcing some bulbs to grow by stripping off all their outer coats. I myself have potfuls of them, from two to four years planted: I look at them from time to time, and find that nearly all are alive, but they do not grow. Messrs. Barr and Sugden's correspondent in Algeria states that he had himself planted a handful of it in a pot, and placed them in a back yard. Within a fortnight every plant had shot forth leaves, and when I saw them they were 4 in. long. These bulbs had probably nearly all flowered during the previous three months. What I wish to infer from this experiment is, that we let them lie too long before planting, and that the coats of the bulbs get hardened by exposure to the air to such a degree that the hair-like roots have not power to penetrate them. Seeds would, no doubt, grow, and I endeavoured to procure some last spring, but the mice were so fond of them that they ate them, capsule and all, before they were ripe. Many of the Algerian bulbs are so encased in the indurated soil during summer that no air can penetrate to them, and the first autumnal rains gradually soften the soil, which being heated by the summer's sun, causes them to shoot out into flower in two or three days after. This Narcissus ought to be quite hardy in England, for it grows naturally in Algeria, at great elevations, and in situations where frosts in winter are both frequent and severe. Near the coast it begins to flower in December, and in the interior it flowers as late as April." Since Mr. Munby wrote the above the seeds referred to have been obtained and are found to germinate readily sown in a cool frame as soon as they are received, but up to the present time, I believe, none of these home-raised seedlings have bloomed. Perhaps Mr. Maw, Mr. Elwes, the Rev. Harpur Crewe, or other cultivators of Narcissi can tell us something more of its history during this its flowering season.



Narcissus monophyllus.

Parkinson, in his oft-quoted "Paradisus," p. 106, says that the White-hooped Petticoat Narcissus, or Pseudo-Narcissus juncifolius flore-albo, as he calls it, hath long and very green leaves, "among which riseth up a short stalke, seldom half a foot, bearing at the top, out of a skinie husk, one small white flower, sometimes inclining to a pale colour, having six small and short leaves (segments) standing about the middle of the trunk, which is long and much wider at the top than at the bottom; the small outer leaves or wings are a little tending to green, and the trunk (as I said) is white or whitish, with the brims a little uneven." This plant is figured and described in "Gerard's Herbal," p. 34, fig. 5. Mrs. Loudon asserts in her "Bulbous Plants" that "it is a native of Biscay, and that it is found in great abundance among the mountain passes of the Pyrenees."

This Narcissus is known under various names; it is figured and described in the "Revue Horticole," 1874, p. 329, under that of N. Clusii, and a form bearing smaller creamy-white flowers, with a brownish heel to the floral segments, is said to be in cultivation in the Jardin des Plantes under the name of N. Graellsii. N. cantabricus is one of its oldest names, but N. monophyllus is that most generally adopted. F. W. B.

SOWING SEEDS OF ALPINE AND HERBACEOUS PLANTS.

As about the first or second week in March the all-important operation of seed sowing should be attended to, a few hints on this subject may not be inappropriate at the present time. I am, of course, presuming that cultivators of herbaceous or Alpine plants are fully aware of the necessity of a watchful eye over all plants that are not endowed with root-rambling propensities during the summer and autumn, with a view to collect, dry, or store away their seeds. If they have not been watchful, my advice is not to allow another summer to pass by without carrying this process into effect. The simplest plan is to arrange the seeds in a series of garden saucers of various sizes, on which should be written the names of the seeds, and place them in a dry room or a sunny window, commencing on a wet day, when no out-door work can be done, to clean them thoroughly; then put them away in ordinary seed papers, on which should be legibly written the name and the year in which they are collected. The value of this will be readily understood, when I say that in the best managed herbaceous border not a summer will pass without blanks being left, owing to such causes as a very dry season, a very wet season, an ants' nest, a family gathering of wire-worms or black grubs, so great a pest in some soils. In addition there are many good border plants that are biennial, and others which, though not absolutely biennial, rarely flower a second time with the same vigour as the first. All these sources of possible disappointment give to the practice of collecting seeds as much importance and value, as is the reserve corps to a good army. Possibly they may not be required for two, three, or even half-a-dozen years, but if stored away in a dry and moderately equable temperature, they will keep in good condition for that time. The best position is in a rough canvas bag suspended from the ceiling in a dry room. The next point is the process of sowing. My advice is to sow in pots or pans, varying in size according to the quantity of seed; let these be clean and well drained with potsherds or rough ashes. As to soil, the great bulk of seeds will do well in a mixture of sandy loam and leaf-soil, with the addition of a little peat where available; nothing, however, can be better than the "pot emptyings" of those plants which have ornamented the greenhouse during the autumn months, and which should have been placed in a bin in the potting-shed by themselves, with the addition of a fifth part of leaf-soil well sifted, 2 in. of rough material being placed in the bottom to protect the drainage; above that, press the fine soil firmly down, filling the pot to within ½ in. of the brim; and on this surface the seeds should be sown. As regards covering, a very slight amount of soil will be necessary, provided the plants are to be placed under the protection of glass; but this top-soil should be well incorporated with sharp silver sand, in order that the water from a fine-rosed pot may be absorbed at once over the whole surface. After covering, press the soil firmly down with the bottom of a clean flower-pot, and labelling will complete the operation. For all Alpine and herbaceous plants I prefer a cold frame. The more perfect the glazing (so as to avoid drip) the better. The progress will be slower than when heat is used, but it will prove surer. Some recommend that no water should be given for a few days, but I find a great advantage from watering with a fine rose before removal from the potting-shed; by this means the surface becomes set, and, if by chance and—by no means an unlikely one in removing them—a pot be upset, its contents will remain intact, thereby preventing the loss of a valuable sowing of seeds. Having selected the frame, which should be in a fairly open sunny situation, clear of the drip of trees, a good dressing of quicklime and soot should be applied, or perhaps better still, a good dose of lime-water should be given, so as to destroy the worms, which play sad havoc when they get into a seed-pot; generally they are supposed to eat the roots, but virtually they disturb and disintegrate the soil, destroying its value for the support and nutrition of the young plantlets. In arranging them in the frame, be careful to set the pots and pans, especially the latter, perfectly level, so that the water may settle evenly through the whole mass. Keep the frame close, and give no water for a week, or even two, if the weather be dull. Jas. C. Niven.

PLANTS SUITABLE FOR THE WILD GARDEN.

Wild gardening has become a fashion, and a very good fashion it is; many are thus led to appreciate and enjoy the common plants in the country everywhere surrounding them which would otherwise pass unheeded. There is no plant not exquisitely beautiful, although the beauty of some is more striking, more demonstrative than that of others, but to suppose that we can improve the natural beauty of plants by the tying-in, or tying-out, or cutting, or confining, is a mistake. We cannot make a plant more beautiful, or so beautiful as if left to grow in its own natural way, not all leaf or all flower, but enough of each as Nature intended, and this is the great secret of the perpetual charm of a wild garden. Each plant grows as Nature intended; you apparently get rid of the artificial, there is perfect freedom, and you look and wonder at the forms of grace and beauty, the charms of colour and smell in common things, even in their very decay, for in them we know there is the resurrection and the life again. There is also a pleasant feeling that the plants are fulfilling their destiny, that they are really enjoying their life—not too much heat or too little, not too much water or too little. Nature is head gardener, and exercises that vigilant and healthful care which makes the very plants rejoice, and the heart of every rightly disposed man or woman to rejoice also in looking at them. What a wild garden ought to be all your thoughtful readers imbued with correct taste now pretty well know. It is really the refinement of art—disorderly order—the greatest taste and skill being exercised in concealing art, or showing that the hand of man is in any way interfering with those laws in reference to the plants which, proceeding from the Great Creator, work his will.

Amidst the luxuriance of Furze and Heath, of Ferns and Brooms, of Holly, Brambles, and wild Clematis, of Bryony and wild Roses (the delicate scent of which latter tribe of plants cannot be excelled), of Ivy and Periwinkles, of Foxgloves, Primroses, and Honeysuckles, let me suggest one plant to your readers which, in a wild garden, for summer and winter effect is invaluable—I allude to the great pendulous Sedge, Carex pendula; its long narrow leaves form the most striking contrast to all plants of the Fern tribe, and, as far as my experience goes, I have scarcely seen the plant used in a wild garden. It is easily procured, it is evergreen, its leaves are in well-grown plants about 3 ft. long, and its flower-stems are quite 5 ft. and sometimes 6 ft. high, but its great recommendation is that it seeds so abundantly; once obtain a few plants, the whole of the wild garden in a few years may be covered with it, of all sizes, coming up naturally in all sorts of odd places. It grows in any soil; the more moist and better the soil the larger the growth. In good situations the tufts increase to a large size; 3 ft. in diameter is not uncommon, but the smaller tufts, amidst rocks and Brambles and Ferns, from their brilliant green, produce possibly the best effect. Those who have not this Sedge I strongly recommend to obtain it; it will add a new charm to their wild garden.

There is another plant common enough, but not so much seen in wild gardens as it should be, viz., the Virginian Poke Weed (Phytolacca decandra). Its long, graceful, reed-like stems are 7 ft. high, and bear pinkish flowers and Blackberry-like fruit; its foliage is abundant and good in colour. The great ease with which, by the aid of birds, it becomes self-sown—springing up in all kinds of odd out-of-the-way places where you would scarcely think of planting it—renders it a most desirable plant to aid the illusion of unkempt wildness.

There is another dwarf plant of not many years' introduction, which, for spring effect in a wild garden, mixed with the common yellow Primrose, is admirable. I allude to the Forget-me-not, called Myosotis dissitiflora; this becomes quite wild. Only let alone, in a year or two, from only a few plants you may have thousands springing up in the grass or rude walks, under rocks, at the bottoms of trees—anywhere and everywhere, with their lovely pale blue flowers.

There is another plant common enough, but one which no wild garden should be without if there is only space, and that is the Cow Parsnip (Heracleum giganteum). In a favourable situation it will send up stems 10 ft. high, with leaves 3 ft. in length. It is a grand plant, requiring not the slightest care in cultivation, and once planted in a wild garden and allowed to seed, there will be some difficulty in getting it out of the garden even if desired; it will grow in the most unlooked-for spots, the seeds being carried by the wind. I have named now four plants which no wild garden should be without. Strikingly different in every feature, they possess one common advantage—they grow without the slightest trouble, they sow themselves, and they are of a kind not in any way likely to interfere with the effect of the ordinary well-known British wild plants. One effect a wild garden should have, without which it is most imperfect—it should possess the charm of intricacy, it should be so constructed that the mind may imagine more than is seen; the mystery and fulness of plant growth should never be fully revealed, except diligently sought for; possibly a well-constructed thicket, with rocks and a small stream of running water, may be made to represent the highest form of art of which a wild garden is capable, and such a garden can never tire. Winter or spring, autumn or summer, it will always be beautiful, and always present new sources of interest and delight.—"Gardener's Chronicle." [It is most important to plant such rampant subjects as the giant Cow Parsnip in isolated spots, as it becomes a great nuisance when it spreads about and destroys all the more delicate plants near it. A few plants of it on an island or in some place where they cannot injure other plants by spreading are best. They are, moreover, far from pleasing in appearance when they become the predominant feature. They are seen to greatest advantage in small numbers and in groups in contrast with other plants.]

THE DIFFERENT VARIETIES OF SALPIGLOSSIS.

These now occupy a leading position amongst our showiest hardy annuals. Among them are some new hybrids, remarkable for the size of their flowers and the rich beauty of their colours, which range from a creamy white up to glossy crimson maroon, through many intermediate tints. Some of the blossoms are finely marbled and pencilled, generally on cream, primrose, buff, and yellow grounds. We are indebted to Chili for the original forms of the Salpiglossis. Then followed what is customary with plants of this character raised from seed—the progeny gave different types, and led to improved varieties being named and put in circulation, and some of these can be had in separate colours. The new hybrids, as they are termed, may be said to sum up all the recent improvements, and clumps or masses of these in varied colours have a more effective appearance than either a few, or a large number of plants of any one variety. They flower with great profusion, and as the plants branch freely from the main stems, a continuity of bloom is thus secured. A bed of these Salpiglossis in full bloom is scarcely surpassed by any other hardy annual. Though generally classed among the half-hardy annuals, the seed of the Salpiglossis may be sown in the open ground, provided the soil be light and somewhat sandy, and the position warm. Every year Mr. A. F. Barron, the superintendent of the Royal Horticultural Society's Gardens, sows a large bed in this way, in lines about 18 in. apart, and, as a matter of course, somewhat thinly. The plants come into flower in July, and continue almost to the end of the summer. If wanted in flower at an earlier date, then seed can be sown with the half-hardy annuals, and the plants transplanted to the open ground, and protected by hand-lights, or some such contrivance. No collection of annuals could possibly be complete without the fine showy forms of the new hybrid Salpiglossis. I have sometimes wondered, if the seed were sown in August, whether the plants could be grown on and flowered in pots, in the same way as Schizanthus pinnatus, in March or April. If they can be so treated, they would be very beautiful subjects in the spring time; at any rate, plants treated in this way would flower earlier in the open ground than from spring-sown seed; but the plants would, as a matter of course, need to be wintered in cold frames, or to be otherwise protected.

Quo.

Salpiglossis hybrid.

FOXGLOVES IN MIXED BORDERS.

These are eminently fitted not only to adorn our wastes and wilds, but also our flower borders, where their stately growth and beautiful flowers render them always welcome. In mixed shrubberies and semi-wild places, when once established, they take care of themselves, and annually produce a gorgeous display. Although Foxgloves will grow and flower even in the poorest soils, they well repay more generous treatment, a fact which I have had ample means of proving; for, having a large extent of newly-planted shrubbery that had been well prepared by deep trenching, we planted in the intermediate spaces any hardy flowers that were available in order to give additional interest until the shrubs and Conifers required the space; and strikingly conspicuous were the Foxgloves, whose spikes of bloom not only averaged from 8 ft. to 10 ft. in height, but branched out into quite a column of spikes, thus securing a long succession of flower, and materially prolonging the display. They were indeed as different in aspect from the single stems of starved plants that one generally sees as could possibly be imagined. As the seed is very small, in commencing the cultivation of Foxgloves, it is advisable to sow it in a bed or box of very fine soil, and to prick out the seedlings into nursery beds as soon as they are large enough to handle. They will be in good condition for removal to their permanent quarters by the autumn of the first year or the spring of the following, and if the seed has been procured from a good collection, great variety may be expected. When once established they increase enormously from self-sown seed; but if fine spikes are desired, they must be thinned out and treated as has just been stated, or they will soon deteriorate. By selecting, however, the finest and best marked flowers for seed-bearers, and by removing spikes of inferior kinds before the seed is ripe, their quality will yearly improve. Many comparatively waste places may be greatly improved in appearance by means of such hardy flowers as these—flowers which everybody appreciates.

J. Groom.

Henham.

New Violets.—When I first saw that excellent Violet, Lee's Victoria Regina, a year or two ago, I had an impression that in size, colour, and fragrance, it would never be surpassed. I have now before me, however, fresh flowers of Mr. Lee's new seedling Violet called Prince Albert, which is in every way superior even to Victoria Regina, the flowers being fully 1 in. in diameter, and of a rich dark violet-purple colour, set off by orange-coloured anthers. Victoria Regina is at present preferred to all other Violets in Covent Garden Market, but, when better known, this new seedling will, I imagine, supersede it.—B.

Best Early Flowering Hardy Plants.—The greatest favourites, amongst many others, at present in bloom in my garden are the following:—Iris reticulata, with its purple and golden flowers; Saxifraga Burseriana, smothered with open white flowers the size of a sixpence, and one of the most effective of the group to which it belongs; also S. oppositifolia and its white variety; Primula purpurea is now well in bloom, but it is more lilac than purple; the beautiful little Crocus Aucheri, of a fine orange colour, is certainly one of the best of its class. Sisyrinchium grandiflorum and the white variety are in blossom, and will be followed by S. odoratissimum, white striped with brown; and last, but not least, that most beautiful of all spring flowers, Anemone blanda, is at present in great beauty.—Oxon.

Roses in the Suburbs.—Let the plot of ground, or such of it as is set apart for Roses, be trenched and manured by somebody who knows how to do it. If the soil be a hungry one—gravelly or sandy, or mere brick rubbish—dig into it as much adhesive loam as can be got. If you can't get good loam send for clay, never mind how stiff it is; it is the natural food of the Dog Rose, and only wants the admixture of a little manure. If there be a spare corner in which to heap up the clay for a month or two, sprinkle it heavily with sand, and occasionally turn it over before digging it in; under this treatment it will be rendered more permeable to the rootlets of the plants. If the garden be in a sour, black condition, sweeten it by a good sprinkling with lime, and if a little salt be added it will be better still. Lime and salt will destroy fungoid nuisances and crawling insects which plague the possessors of small gardens. Avoid the drip of trees and sloping banks exposed to the south-west for Rose situations. Draughty corners, angles down into which the dust and smoke have a wretched habit of descending, are obviously bad; the more exposed to the open air and sun the better for the Roses. Let the ground be turned over during the spring; don't be in a hurry to plant; it is too late usefully to plant Roses in the neighbourhood of London; wait until the end of October. During the summer select the Roses at some good Rose-grower's, and limit them to a selection from the following list, which have borne the smoke and bad-soil tests; they are all strong growers, and have good constitutions:—Abel Grand, Achille Gounod, Antoine Mouton, Alfred Colomb, Anna Alexieff, Bessie Johnson, Baron Bonstettin, Baronne de Maynard, Baroness Rothschild, Boule de Neige, Captain Christy, Charles Lefebvre, Comtesse d'Oxford, Duke of Edinburgh, Duchesse de Morny, Elizabeth Vigneron, Etienne Levet, Général Jacqueminot, John Hopper, Jules Margottin, La France, Madame Victor Verdier, Madame Boll, Madame de Cambacères, Madame George Schwartz, Maréchal Vaillant, Pierre Seletzki, Paul Neron, Prince Camille de Rohan, Princess Louis Victoria, Souvenir de Poiteau, Victor Verdier, Aimée Vibert, and Gloire de Dijon.—"Gardeners' Magazine."

Daphne rupestris.—This is a real Alpine gem, surpassing the well-known trailing sweet-scented Daphne Cneorum, both in beauty and fragrance. It has erect shoots, and forms dense compact tufts, 2 in. high and a foot or more across, covered with a mass of bloom which sometimes almost eclipses the plant. Its colour is a soft shaded pink or rose, and its flowers are individually larger and more waxy than those of D. Cneorum, but forming clustered heads in the same way. It is essentially a rock-plant, growing wild in fissures of limestone in peaty loam. It is perfectly hardy, and of easy culture.—J. BACKHOUSE, *York.*

Verbena venosa from Seed.—This is much hardier than ordinary Verbenas, and it is neither so liable to be injured by mildew nor to be damaged by bad weather. Being of a branching and wide-spreading habit, it has a grand effect in large patches, bound round with some contrasting colour; Mangles' variegated Geranium and it associate beautifully together. It is easily raised from seed, which should be sown four months before the plants are wanted, as the seeds frequently take long to germinate. The seeds, which are rather small, should be saturated in water for twenty-four hours before being sown. Fill 6-in. pots, well drained, with loam, sand, and leaf-soil; strew the seed thinly over the surface, but do not cover it over, and water it through a fine rose to settle it in the soil. The pot should then be plunged in a bottom-heat of 75°, and the soil should be constantly kept in a moist state. As the seedlings come up and form four leaves, they should be lifted out carefully, to make room for those which may follow, and the young plants should be planted in pans or boxes about 2 in. apart in much the same kind of mixture as that in which the seed was sown. If they are then placed in a heat of 60° they will shoot up rapidly, and if stock be short, the tops may be taken off and put in as cuttings. When once a sufficiency of this plant has been raised, it may be retained without annually having recourse to seed-sowing. If the roots be covered over in the flower-beds with a few inches of leaves or manure in autumn, they will winter safely; and, if lifted about the beginning of February, and started in a heat of 60°, plenty of cuttings will soon be produced. In cases in which it is necessary to lift the roots in autumn, they may be placed at once in the boxes in which they are to be started, and kept in a cool place until the time arrives for putting them in heat. In herbaceous borders, the roots may be allowed to remain for years, but they should be protected throughout the winter, or they may be injured should the frost be severe.—J. MUIR.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Golden Foxglove.—Can any of your readers inform me where I am likely to obtain plants of the Golden Foxglove (Gerardia quercifolia)? I am informed that it grows on the Catskill Mountains, near New York, and that it is known as the American Golden Foxglove—R. D.

Agave Utahensis.—This is a really hardy Aloe from a high mountain region. It forms a very distinct and most interesting rock-plant, the colour of which is silvery-glaucous. It should be planted in a sheltered place on rockwork in full sunshine, and where the roots can penetrate into moist rich soil, limestone being preferred.—M.

Hepatica Barlowii and other kinds.—This beautiful variety of the Anemone Hepatica, although not new, is far from common. All who care for the Hepatica will do well to add it to their collections, as the flowers, being purplish-mauve, are distinct in colour, and it has a robust habit of growth. The flowers are large, and good-sized plants, in full bloom, have a charming appearance. My collection of Hepaticas now includes single and double red, single and double blue, single white, single mauve, angulosa, and Barlowii. Is there a double white kind in existence?—A. D.

Effective Spring Flowers.—I have often been astonished to hear people who have gardens ask the name of the pretty Siberian Squill when they have seen it in bloom here. Why it is not as well known and as commonly grown as the Snowdrop is a marvel; for its flowers are of a lovely blue, a colour by no means common in gardens at the end of February. If anyone wish to secure a startling effect on a border early in spring, let him plant in good-sized patches Double Snowdrops, Siberian Squills, Cloth of Gold Crocus and Double Red Hepaticas; all of these will produce lovely masses of colour at the same time.—A. D.

THE LIBRARY.

LIVINGSTONE'S LAST JOURNEYS.

THE interest of this book depends very little on its botanical contents, and yet few men must have seen more striking aspects of vegetation or more of tropical and sub-tropical African vegetation than Dr. Livingstone. The interest, too, of the book is sadly marred, from the fact that the native names are, as a rule, the only ones used in speaking of plants and thus one can rarely get an idea of what is meant respecting the rich and beautiful nature of the country and the scenery here and there referred to. For instance, on p. 255, vol. i., we read as follows, in a letter to Lord Clarendon, concerning the shores of Lake Liemba:—

"On the second April last we reached the brim of the cup-like cavity in which the lake reposes. The descent is 2000 ft., and the still surface of the water is upwards of 2500 ft. above the level of the sea. The sides of the hollow are very steep, and sometimes the rocks run the whole 2000 ft. sheer down to the water. Nowhere is there three miles of level land from the foot of the cliffs to the shore; but tops, sides, and bottoms are covered with well-grown wood and grass, except where the bare rocks protrude. The scenery is extremely beautiful. The Aeasy, a stream of 15 yards broad and thigh-deep, came down along our precipitous path and formed cascades by leaping 300 ft. at a time. These, with the bright red of the clay schists among the greenwood trees, made the dullest of my attendants pause and remark with wonder. Antelopes, buffaloes, and elephants abound on the steep slopes, and hippopotami, crocodiles, and fish swarm in the water. The elephants sometimes eat the crops of the villagers, and flap their big ears just outside the village stockades. One got out of our way on to a level spot and then stood and roared at us. The first village we came to on the banks of the lake had a grove of Palm oil and other trees around it. This Palm tree was not the dwarf species seen on Lake Nyassa. A cluster of the fruit passed the door of my hut, which required two men to carry it."

Allusions to trees or plants are usually no more instructive to the botanist than the following:—

"One fine straight tree in the hollows seemed a species of Fig; its fruit was just forming, but it was too high for me to ascertain its species. The natives don't eat the fruit, but they eat the large grubs which come out of it. The leaves were 15 in. long by 5 in. broad; they call it Unguengo."

"Among the vegetable products of this region (near Lake Moero) that which interested me most was a sort of Potato. It does not belong to the Solanaceous but to the Pea family, and its flowers have a delightful fragrance. It is easily propagated by cuttings of the root or stalk. The tuber is oblong, like our Kidney Potato, and when boiled it tastes exactly like the common Potato. When unripe it has a slight degree of bitterness, and it is believed to be wholesome; a piece of the root eaten raw is a good remedy in nausea. It is met with on the uplands alone, and seems incapable of bearing much heat, though I kept some of the roots without earth in a box which was carried in the sun almost daily for six months without destroying their vegetative power."

In extracts of this kind the book abounds, and they are very suggestive of the botanical interest possessed by the great forest plateau of Central Africa.

The Chufa, or Earth Almond.—The Chufa is a perennial, indigenous in the south of Europe, growing in the form of a Rush to the height of about 3 ft., producing small tubers about the size of an ordinary Bean, called by the French, Souchet Comestible (Rush Nut). In taste the tubers resemble a delicious Chestnut or Cocoa-nut, and may be eaten raw or cooked. After soaking in water twelve hours, they may be eaten as a sauce. Dr. C. T. Jackson, in the "Journal of the American Department of Agriculture," states:—"When these tubers are beaten to a paste and mixed with water, a remarkable emulsion is formed, which, after straining, resembles milk in appearance. The fat at length rises to the surface and looks like cream, whilst most of the starch subsides to the bottom of the vessel; but enough still remains suspended to give the emulsion the appearance of thin or skim milk. Thus mingled with water, the most nutritive ingredients of this plant may be taken as a drink. It is much used in this manner by the Spaniards, and I have no doubt will be so employed in this country. This emulsion may be sweetened and flavoured so as to make it very agreeable to the taste." They are chiefly used in Spain and other hot European climates for making an orgeat (orchata de Chufas), a delightful and refreshing drink.

AN AFRICAN FOREST. From "Livingstone's Last Journals" (French Edition).

THE INDOOR GARDEN.

FUCHSIAS PLANTED OUT AND IN POTS.

Among my earliest recollections of Fuchsias was a large old "tree" (I may safely so call it) of exoniensis, planted in a conservatory border. It has, however, long ago disappeared, and the name is well-nigh forgotten; and many others, raised since, have had to give way in like manner to improved varieties; but I still think that for the decoration of large houses, the system then adopted, of planting them in the borders, and either training them as pyramids or standards, had its advantages. Another plan that I have often adopted in treating them as permanent plants was to cut them down to the ground after they had ceased blooming without disturbing the roots, thus making room for Chrysanthemums and other autumn and winter-flowering plants, these again being removed when the Fuchsias commenced growth in spring. With a little thinning and training, dense globular-shaped bushes would be formed that would astonish anyone whose experience had been confined to their culture in pots. But, in addition to the examples I have just mentioned, there are still more effective ways of growing and training Fuchsias. The free-growing kinds may be led up into the roof and trained along the rafters or over arches, where their beautiful pendulous wreaths of flowers would be seen to the best advantage. There are some kinds, such as Dominiana, that bloom naturally in winter; others, as Venus de Medici and grandiflora plena, if pruned back in August, will make a new growth and flower beautifully the greater part of the winter. Unfortunately, although the number of varieties of Fuchsias now in cultivation is legion, those of a really good branching habit are still comparatively scarce. Raisers of new Fuchsias seem to have paid more attention to the improvement of the size, shape, and colour of the flower than the habit of growth of the plant. Looking back to the time when globosa was held in high estimation in the flower garden—and many effective beds I have seen of it—the idea naturally presents itself that we ought now to be in possession of a race of dense-habited varieties suitable for mixed borders or for beds. I think Fuchsias have been looked upon too much as greenhouse plants, but, in most places, even the tenderest new varieties may be left in the ground during the winter, provided a cone of ashes or old tan be placed over the crowns after they are cut down and before severe frost sets in. Although I have directed attention to various effective modes of growing and training Fuchsias in large houses where there is room for development, yet the Fuchsia submits very readily to pot culture, and in most places that must still remain the chief way of cultivating it. A few plants placed in heat in February will produce plenty of young shoots that will quickly strike either in a pan of sand and water placed near a flue or hot-water pipe, or they may be dibbled into pots of light sandy soil and plunged in a hot-bed of 75° or 80°. There is a freshness and beauty about young plants when grown in pots that old plants never attain; in fact, for ordinary purposes of decoration (unless very late plants are desired) old plants, if kept in pots at all, should be cut down and converted into bushes. In this way handsome plants full of young vigorous growth, superior in every respect to the old scrubby plants commonly met with, will be formed. I admit the pyramid-shaped plants, with a single stake to support the main stem, regularly clothed from the pot upwards with a dense growth of drooping branches full of flowers, have a more natural and more graceful effect; but in most places there is room for variety, and other forms are undoubtedly admissible, nay even desirable. In the culture of Fuchsias, to have well-grown plants from the time they are fit to be removed from the cutting pot until they are in their blooming pots, they should never be allowed to become pot-bound, moderate shifts being by far the most preferable. If they be not shifted on as soon as the roots are fairly in possession of the new soil, they will experience a check that will throw them into flower, and after that it is almost useless trying to force growth. On the other hand, if they be shifted into pots of too large a size, unequal growth will take place; strong shoots will break away, which will necessitate stopping, and, in all probability, spoil the symmetry of the plants. In potting, the ball should be transferred from one pot to the other without injuring or disturbing the roots in any way, and the soil should be rammed in moderately firm; young plants should be shifted into pots 1 in. larger, but as the plants get stronger 2 in. will not be found too much, as rougher compost must be used. Fine specimens may be grown in 10 or 12 in. pots, and very handsome pyramids of 3 ft. in height may be had in 8-in. pots. Fuchsias like a rich soil freely drained, consisting of turfy loam, old thoroughly decayed manure or leaf-mould in about equal portions, with a good sprinkling of charcoal dust and sand, and, if at hand, a handful of bone-meal may be added at the last shift. Should they be required to bloom for a long time and continuously, they must be well fed. During the time they are making their growth a moist atmosphere is indispensable, and they will succeed all the better if placed on a damp surface in a house where the night temperature does not fall below 55°. They are often well grown under Vines, the moist atmosphere necessary for their proper development, and the partial shade of the Vine foliage seeming to benefit them materially; bear in mind, however, that where the Vines are closely trained and the foliage becomes dense, the shade will be too much for the Fuchsias. When extra large plants are required for exhibition purposes, it is better to strike the cuttings in August, and grow the young plants steadily on in a warm house during the winter, and by the usual time of spring propagating they will be fine bushy plants 1 ft. or more high, in 48-sized pots, ready for pushing on with the increasing daylight; and, of course, such plants, under similar management, will never be overtaken by spring-struck cuttings; but it involves more trouble, as they must have a light warm position. When in flower, they should be placed in a cool airy house. A north house will suit them admirably in hot weather, and they will be benefited by having clear liquid manure two or three times a week. I have a partiality for soot-water, the effect being, in my opinion, to bring out more fully the brightness of the colours. I have already said that amongst the numerous varieties of Fuchsias now in cultivation, kinds of good branching habit are comparatively scarce. The list I give below does not contain the newest, but the kinds named will not disappoint any cultivator who may choose to give them a trial.

Light Varieties.—Arabella, Improved, Lady Haytesbury, Puritani, Annie, Starlight, Guiding Star, Conspicua, and Vainqueur de Puebla.

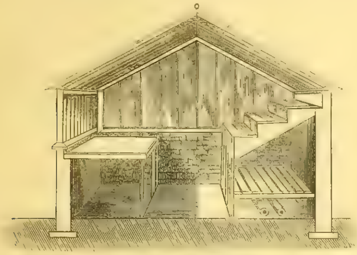
Dark Varieties.—Enoch Arden, Father Ignatius, Souvenir de Chiswick, Pauline, Roderick Dhu, Avalanche, Grand Cross, and Universal.

In addition, I should recommend Rose of Castile and Daniel Lambert for their early-blooming qualities; also Sunray for its beautiful foliage, both exemplified in the flower garden and in the shape of small neat plants in winter. E. Hobday.

The Peruvian Trumpet, planted out and in pots.—In the race after novelties many a good old standard plant seems to drop comparatively out of sight and out of favour, for the time at least. Among such must be included the grand old Brugmansia suaveolens. It is no disparagement to many plants of more recent introduction that are now popular, that, for strikingly distinct character and general effectiveness as greenhouse ornaments, they come very far short of Brugmansia suaveolens, a stately plant, producing, when properly managed, a great profusion of immense white blossoms, sweetly fragrant and very effective. To see the plant in perfection, says Mr. Thomson, in the "Gardener," it is best planted out in the border of a large, airy, and light conservatory. But, being a most greedy and luxuriant subject, its roots must not have access to the feeding ground of more delicate subjects, or it will rob them thoroughly; and, to make it bloom most profusely, it should be limited as regards range of border. Although it is a large-growing plant, it submits with comparative ease to small-pot culture; and it is perhaps never so free in its flowering qualities as when confined to pots ranging from 11 in. to 20 in. in diameter. It can be struck from eyes of ripened wood, just as is practised with Vines in early spring, and grown into free-flowering plants in 6-in. or 8-in. pots in autumn. After the wood is pretty well ripened, it may be spurred back very much like a fruit tree, dried off and stored under a greenhouse stage or in a back shed out of the way till spring, when it may be returned to the greenhouse, watered, and, after it begins to grow if need be, re-potted. Although in a pot of from 15 to 18 in. in diameter it grows and blooms well for several years without being disturbed; a top-dressing with rotten manure, and an occasional watering with manure or guano-water, induces it to grow freely. It will thus be seen that it is an accommodating plant, well suited to the conditions of many amateur growers; and, when treated with merely ordinary care, few plants will rival it for striking effect and sweetness for many weeks late in summer and autumn. It may be pruned into any shape, and, probably, from the drooping habit of its flowers, it is best grown with a clean stem to any height, according to taste and head-room. It is not by any means particular as to soil, that in which a common Pelargonium will thrive will suit it perfectly. In some nurserymen's catalogues there are enumerated Brugmansia suaveolens and B. arborea. They are the same plants. Originally it was Datura arborea, a name by which, perhaps, it is better known than by any other. There is a semi-double variety called Knightii, also worth growing; and B. sanguinea, a flame-coloured variety, is also well worthy of a place where there is room for both varieties.

POTTING HOUSES *versus* POTTING SHEDS.

Few structures about a garden are more useful than that in which plants are potted. About most places there is only a potting shed, which is a storehouse for all kinds of things. Such places, too, are often unfit for the reception of plants, and are uncomfortable for those who are compelled to work in them. Comfort and convenience are points which should be considered in erecting potting houses of all kinds—comfort as regards interior arrangements, and convenience as respects having them situated close to where they are most needed. The shed form admits of no choice of a site except that afforded in some out-of-the-way place. A potting house, should, however, be erected like any other glass structure. Of the best form for such a house, the annexed is a sectional representation. It will be seen that there is nothing objectionable in its appearance, and the interior arrangements are all that can be desired. The back part of the roof is supported by a stone wall; the front is provided with hinged lights for ventilation, and there are movable lights on the roof for the same purpose. In the front is fixed the bench for potting on, and there is, as will be seen, ample accommodation underneath it for storing away soil and for keeping it dry. The bench is 3 ft. in width, and the space in the centre is the same width; but this may be increased according to the dimensions of the house. In the back part, a few inches from the floor, is a flow and return 4-in. hot-water pipe, and the shelf above these pipes is for holding the empty flower pots. On the three shelves above this are placed plants which may be brought in to pot, or after they are potted they may remain until another place is prepared for them. In cases of necessity, potting houses of this description may be used as plant houses, the heat being regulated according to circumstances. In such houses potting can be done with comfort, even in the coldest weather; and the advantages possessed by such houses over sheds, in which plants cannot be left with safety for a single night in winter, cannot be over-rated. J. Muir.



Section of a Potting House.

Sisyrinchium Douglasii.—"Fraxinella" (see p. 231) speaks of the beauty of Sisyrinchium grandiflorum: a plant which we had last year from Mr. Van Houtte of Sisyrinchium Douglasii is now in bloom; its colour is deeper and still more beautiful than that of S. grandiflorum.—George F. Wilson, *Heatherbank, Weybridge Heath.*

CULTURE OF BERRY-BEARING SOLANUMS.

These are excellent for table decoration and for other indoor purposes in winter. Seeds of them should be sown in pots or pans, and placed in a temperature of 65° about the middle of this month; and as soon as the plants are large enough to handle they should be pricked into other pans, and ultimately potted singly into pots some 4 in. in diameter, to be planted out in light soil about the last week in May, or early in June, selecting a situation for them fully exposed to the sun. If the weather be dry, they should be well supplied with water, until they have become fairly established; and, as they continue to grow, stop or shorten any of the shoots which may be inclined to unduly develop themselves, in order to secure symmetrical and well-formed plants. Not later than the first week in October they should be carefully lifted and potted, in pots not exceeding 5 in. or 6 in. in diameter. They will then be thickly studded with bright green berries, or, if the summer has been warm, they may be commencing to turn red. Pot them in light and not too rich soil, and as soon as this has been done they should be placed on the north side of a wall, raising the pots on bricks, or setting them on a stage of some sort, to prevent worms from entering the pots, and for some time the plants should be syringed twice or thrice during the day, or until they have become established, which will generally soon be the case, and in the course of a fortnight, more or less according to the state of the weather, they should be placed in a light greenhouse or pit and fully exposed to the sun, abundance of air being admitted whenever the weather is at all favourable. Treated in this way, the bright green berries with which the plants should be thickly studded will quickly become rich coral red, or bright orange and crimson, a condition in which they will remain throughout the winter and spring months.

Soon after the middle of March the berries will begin to shrivel, when the shoots may be cut in, or the plants may be formed into standards, pyramids, or round-headed specimens, as the case may be, placing them in a cold pit, and supplying them with water as required, until about the last week in May. They should then be turned out of their pots, the balls of earth considerably reduced, the long roots cut back, and the plants turned out into a soil and situation similar to those already recommended for seedlings of the current season. These older plants will be more likely to become well furnished with fruit during the second season than the first, and will form better specimens for the decoration of the greenhouse or conservatory during the following winter than young or yearling plants, especially during such cold and wet summers as that of 1875, when yearling plants were so late in flowering that their fruit was not ripe or coloured by Christmas, a season when they are generally most in request. When lifted in October for the purpose of being re-potted, the balls of earth may be so reduced, and the roots cut back to enable them to be potted into pots about 6 in. in diameter, a size most convenient for table and other decorative purposes; but for larger and finer specimens larger pots may, of course, be used. There are few plants, however, which will admit of greater liberties being taken with their roots than Solanums. They, however, like plenty of water when the pots become filled with roots, and any neglect in this respect will be likely to result in a portion at least of the leaves becoming yellow, and falling off.

The best varieties for winter decorations are S. capsicastrum, pseudo-capsicum, hybridum, and hybridum Hendersoni. The last named is a fine new variety, bearing an abundance of glossy, orange-coloured, erect, conical-shaped fruit.

Culford Hall, Bury St. Edmunds. P. Grieve.

Lithospermum scandens under glass.—When planted out in a conservatory border, this is a free-growing and excellent climbing plant of easy culture and of considerable beauty. It may be usefully employed for covering bare spaces on walls, pillars, or arches, or for festooning under roofs; it is also especially adapted for draping large hanging baskets, a position in which it flowers freely. Treated as an annual in the open air, it is likewise a desirable plant to have in association with such plants as Cobæa scandens, Tropæolums, Maurandias, and other fast-growing summer climbers, where such plants are in demand for covering walls or scroll-work, or for planting round the edges of rustic beds or baskets. It may be easily raised from seeds sown now in heat, under the same treatment accorded to tender annuals, but I prefer plants raised from cuttings, as I think they have a greater tendency to early flowering. A potful of cuttings that have been well rooted in autumn, and kept in a greenhouse temperature during the winter, will furnish plenty of fresh cuttings, which will quickly strike in heat.—E. H.

Leucophyta Brownii indoors.—In addition to being one of the best of white-foliaged bedding-plants, this may also be turned to good account for winter decoration in rooms or in the conservatory. Old plants of it lifted in autumn, and potted in as small pots as the root can be conveniently got into, or massed together in earthenware pans, if placed in a cold pit, soon establish themselves. Striking effects can often be obtained by arranging masses of dwarf plants, such as Lycopodiums, Coprosmas, dwarf Ferns, and others, in a deep irregular fringe round groups of taller growing plants, and for such a purpose the Leucophyta, owing to its dense habit and peculiar growth, is especially suitable. Early in autumn is the best time for propagating it. In a cold close frame it roots with the greatest certainty, but it must have time, as might be expected, from its wiry habit of growth. Cuttings of it taken in spring from plants previously excited in heat, will also grow, but they do not produce such vigorous, well-grown subjects as when planted in autumn.—E. Hobday.

Solanum Pseudo-capsicum variegatum.—This is one of the prettiest conservatory or warm greenhouse plants we possess, particularly during the dull winter and early spring months, when flowering subjects are scarce. To have a few grown with good bushy heads, and placed here and there amongst other plants, gives a house a pleasant tone of colour and brightness without any flowers; but when arranged with the berried varieties, red and white Primulas, and a few Dutch bulbs intermixed, they show off well, and all have a very pleasing appearance. This variety is best increased by means of cuttings, as it does not come true from seed. Cuttings of the young wood just as it begins to get firm are the best, and will strike in any ordinary frame. When struck, pot them off, and place them in a pit or frame with a little bottom-heat, keeping them close for a few days to enable them to get a firm hold of the fresh soil, admitting air freely on fine days. They should be grown under glass the first season, as cuttings do not grow so freely as seedlings; shift them on as required, using a compost of good rich loam, leaf-mould, and silver sand in equal proportions. In potting, be sure and make the soil firm, and on no account allow them to get too dry at the roots.—W. W., *Eaglehurst.*

Forcing Branches of Hardy Shrubs.—It is necessary that the wood chosen for this purpose should be well ripened and the bloom-buds in an advanced state. Magnolias and Rhododendrons answer well, and we have been very successful with Laburnum, Hawthorn, double Cherry, and Ribes sanguineum. The process is extremely simple:—During January, or early in February cut off goodly-sized branches, and immerse the bases to a depth of a foot or so in water, in a house that is heated to 60° or 70°, and in from three weeks to a month the bloom will be plentifully produced. I have often practised this plan with success, and I find that the results fully repay for the trouble. The points to be observed are: A properly-heated house; a tank or tub of water—rain-water preferable; and, above all things, good stout branches, well set with bloom buds. I particularly remember one instance:—An old hedge of Maiden's Blush Rose had to be destroyed, and, at the time (February), I had some of the best plants brought in, some with and more without roots; in the third week in April we had Roses by the basketful. The same with the double Cherry, Ribes, and Laburnum. I advise everyone who has sufficient heat to try this simple plan.—"Country."

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Forced Lilies of the Valley.—I am more than ever convinced that the proper way to grow these charming flowers for forcing is not to turn them out of their pots, but to take care of the foliage, and ripen it well after the plants have bloomed.—N. H. P.

Laurustinus for Winter Flowering.—In accordance with Mr. Simpson's recommendation, I obtained six good plants of Laurustinus, and they have been since Christmas one sheet of small pure white flowers. They have been invaluable for bouquets and cutting purposes generally.—R. Gilbert.

The Persian Iris Indoors.—This is truly a little gem, the flowers of which are white, changing to a very pale blue, with a purple maroon-coloured blotch on the lip, and a centre stripe of bright orange. It is very sweet-scented. Its height is only 3 in. It is a winter-flowering variety, and the only one that will bear forcing.—R. H. B.

PLATE XI.

NEW NECTARINES.

1, Humboldt; 2, Byron; 3, Lord Napier.

Drawn by H. HYDE.

The annexed plate contains representations of three new Nectarines, all raised by Mr. Rivers, of Sawbridgeworth, and all acknowledged to be excellent additions to existing varieties of that fruit. They have been carefully drawn from specimens forwarded by Mr. Rivers to The Garden office.

Humboldt.—This is one of the finest of orange-coloured Nectarines, and one which is a valuable addition to English fruits of high-class character. It belongs to the Pitmaston Orange class, a race which, strange to say, is said to have been raised from the Elruge. The Pitmaston Orange and its descendants are singularly rich in flavour, and when allowed to become fully ripe and partly shrivelled at the stalk, no fruits can be finer than they are. The Humboldt possesses the characteristics of the family in a high degree. In an orchard-house, guarded from the wet, it becomes a sweetmeat. The fruit is above the middle size, and the tree will bear abundantly if allowed to do so; but to obtain fruit of good size and fine flavour, thinning must be rigidly carried out. Its skin is a bright orange, densely mottled with red, and very handsome. The flesh is also a bright orange, and red round the stone. The flowers, like those of the Pine-apple Nectarine, are large and handsome, making the orchard-house very gay during the flowering season.

Byron.—This Nectarine forms a striking illustration of the variation which occurs in fruits produced from seed. It was raised from the Bowden, a Nectarine not much known or cultivated, and for good reasons, as it hardly deserves notice among the crowd of good Nectarines which we have at present in cultivation. The Bowden is a large fruit, green on the shaded side; its flesh is also pale-coloured. The Byron differs from its parent, being a rich yellow, darker on the sunny side; the flesh is orange and dark red round the stone, and the flavour is singularly rich and good. This variety resembles the Pine-apple Nectarine, but even if the two be grown in the same garden, they will be found sufficiently distinct to merit a separate place either in the orchard-house or on a wall. In spring the flowers of Byron, being very large and brilliant, make a fine display, and the glands, both in this and in the Humboldt, are kidney-shaped.

Lord Napier.—This, a seedling from the Early Albert Peach, promises to be one of the best early Nectarines in cultivation. It is some days earlier than Hunt's Tawny, at one time considered the best early kind, and it is greatly superior to it in size, flavour, and appearance. The fruit of Lord Napier is of the largest size, pale on the side not exposed to the sun, but a mottled bright red on the sunny side; its flesh is pale, very juicy, and rich, and separates freely from the stone. Its flowers are large, and the glands of the leaves kidney-shaped. It fruits abundantly and forces well. Hitherto it has proved good both on the wall and in the orchard-house; in the latter it ripens about the end of July or beginning of August, much of course depending on the position which it occupies in the house and the season.

PRUNING DWARF PEARS.

It is well known to every intelligent fruit culturist, that there have been many failures with dwarf Pears. Considering the way in which they have been managed, it is surprising that there should not have been more. Other kinds of trees, as the Apple, Peach, and Cherry have been generally treated with utter neglect, and yet some of them have survived and given tolerable returns. Presuming on this success, most planters are determined to compel dwarf Pears to submit to the same treatment. The result has been the exclamation, Dwarf Pears are a mistake! Cultivation is quite as essential to the growth of the dwarf Pear as to farm crops, and other requisites must be superadded. The stocks must be good and vigorous, and not like many formerly used. The varieties of the Pear must be selected among those which grow vigorously on the Quince, which probably do not constitute a twentieth part of the whole number of sorts. Many fail because they are comparatively unfitted for dwarf growth. Failure sometimes results from a cold, thin, or wet soil, and more frequently from a want of manuring and sufficient culti-

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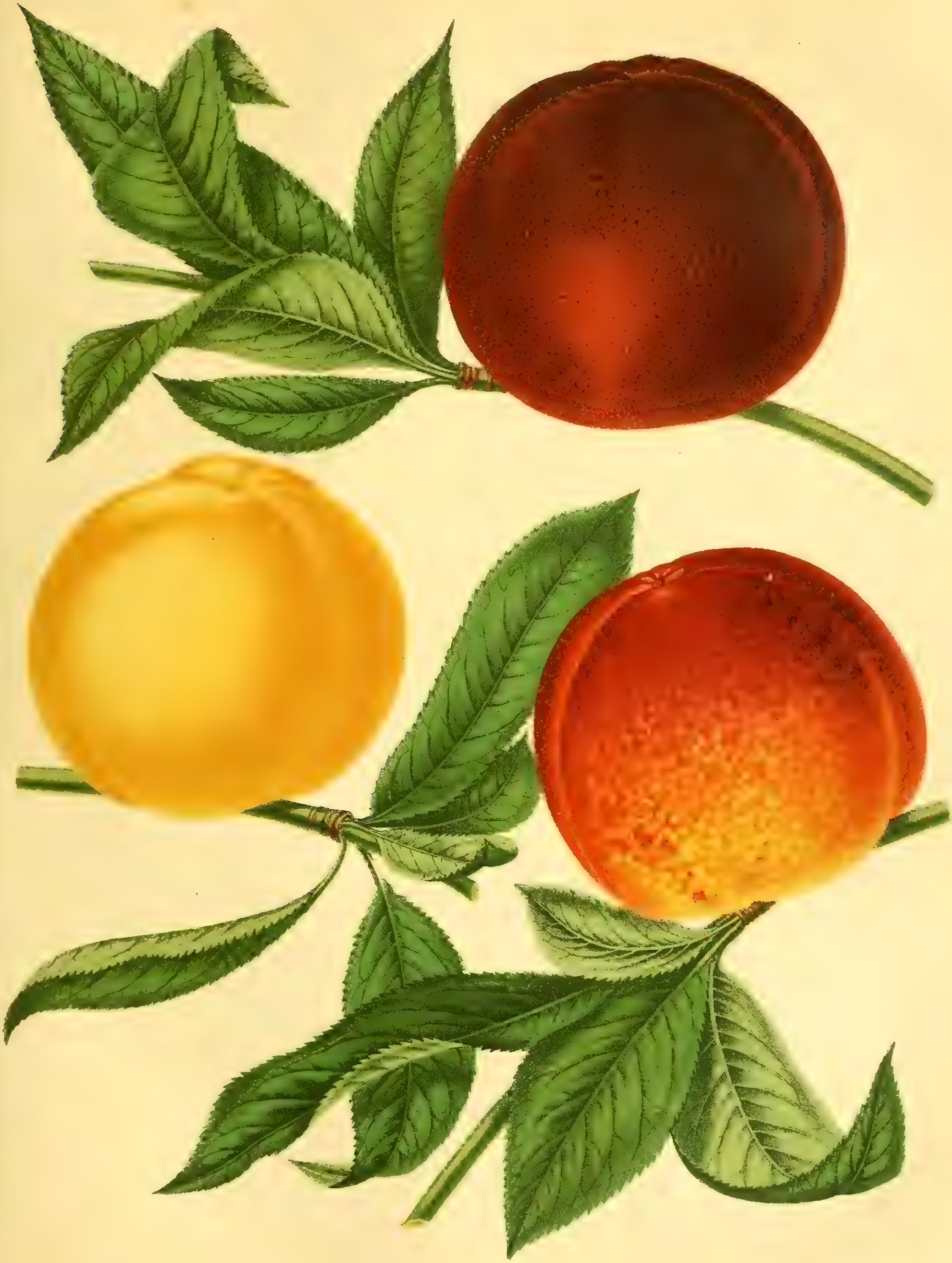

THREE NEW NECTARINES

vation. And lastly, a neglect of thorough pruning has been a fruitful cause of failure. The former requisites having been already treated of in former numbers of the "Register," the latter may deserve some further attention. Experience has convinced us, that with good trees, of well chosen varieties, on any good land, which is never too wet; and with good culture and the important—nay more, the indispensable requisite to success—thorough pruning, no one need fail of attaining a degree of success highly satisfactory and profitable.

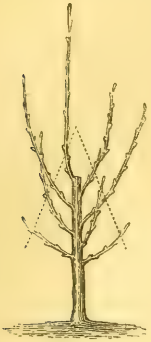
Fig. 1

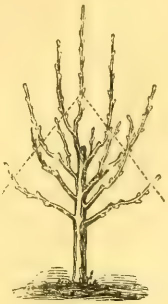
Fig. 2.

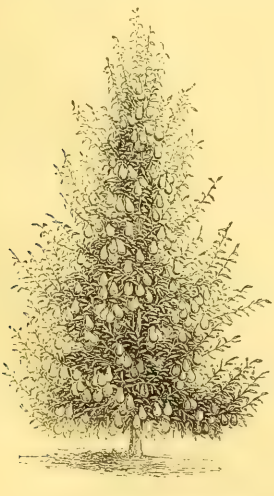
Fig. 3 (fully formed pyramidal tree).

A dwarf Pear tree should never be planted at one year old. A good one-year-old tree consists of a single upright shoot or stem, from 3 ft. and 1½ ft. to 5 ft. high, and should be cut off at about 2 ft. from the ground; and in order to give a smooth, handsome stem or trunk, let the buds be rubbed off, to the height of 1 ft. from the ground—leaving on the upper portion six to nine buds, more or less; with the tree standing in its original position in full vigour, and cut back as above stated, each one of these buds will throw out a good strong branch, thereby giving a full round distaff form to the tree, and is the time and manner, and the only time, when that desirable shape can be given, on which the future form of symmetry and beauty so much depends; and to avoid what is termed a crotched or fork-topped tree, in which the two uppermost branches are about of equal vigour and height, let the second branch from the top be pinched off when about 9 in. or 12 in. long, which will check and weaken it, while the uppermost one becomes a strong central leader; whereas, if the tree be transplanted at one year old, and cut back as above stated, the vital forces of the tree will be weakened half or three-fourths by transplanting, and, as the result, only two or three (more or less) of the buds on the trunk will grow so as to form branches, and those perhaps only at the top or all on one side, while the remaining buds remain dormant, never afterwards to be developed, as the other branches form new channels, which will more readily carry the sap to the other and upper portions of the tree. For transplanting, therefore, let a tree be two years old from the bud, well cut back at one year old, and with six to nine main branches, which form the frame-work or foundation, which is to give form and character to the future tree, with proper care and management. The annexed cut (fig. 1,) will illustrate a two-year-old tree, as above described, its lower branches about 1 ft. from the ground, its upper branches being the strongest and most upright, and those below less vigorous and more horizontal. I speak of this more particularly, for the reason that all the illustrations which I have noticed in works on Pomology and in horticultural papers, represent a two-year-old tree, with the branches longest and strongest at the bottom, and diminishing in vigour towards the top, except, perhaps, the centre top branch; while all experience illustrates the principle that the sap flows most freely and readily to the upper branches, giving them vigour, strength and uprightness, to the diminution of the same characteristics in those below. The dotted lines indicate where the branches should be cut back at the time of planting. In cutting a tree, with branches formed as above described, let the leader be cut down within 4 to 6 in. of the place where the one-year-old tree was cut off, and just above a good bud on the side of the tree, over the previous year's cut, thus keeping the leader in a perpendicular position over the original trunk or bottom of the tree. If the side branches be too horizontal, upper buds are left for their extension; if too upright, lower buds are left. Side directions may be given, if desirable, to fill wide spaces, in the same way. Cut the other branches at such a distance from the trunk, that the ends of all of them would form a pyramid, the base of which should not be over 12 to 16 in. in diameter, and in small trees much less; thus the lowest branches will be left the longest; the object of which is to check the natural flow of sap to the upper branches, and induce it to flow more forcibly to the lower ones, increasing the vigour and force of the latter as much as possible, which must be done at that time, or never. Fig. 2 represents a two-year-old tree after it has been pruned at two years old, and made the third year's growth, and showing where it should be cut back at that time. All subsequent pruning will become easy to anyone who has attended to these directions thus far—observing the same principles, thinning out or cutting back any secondary or other branches, as shall seem necessary to admit light and air, or give vigour or symmetry of form to the tree; but as the greatest force of sap will flow to the central and upright branches, they will need to be cut back most, retaining, as near as may be, the pyramidal form. —"Rural Affairs."

PLANTING VINES IN INSIDE BORDERS.

Planting Vines inside of the house and allowing the roots to grow freely into the outside border is generally found to be the best way of treating them. When planted outside, few roots find their way inside, although a suitable border may have been prepared for them. When planted inside many of the roots take possession of the soil, while others make their way outside. In early forcing it is an advantage to have a good quantity of the roots under cover, and late in autumn or throughout the winter when the fruit is hanging, it is easier to keep it in a state of perfect preservation when the base of the rod and the numerous roots attached to it are indoors. In some cases the roots are entirely confined to inside borders, and, where the Vines are forced early, that plan answers for a time; but their energies soon become impaired chiefly through the restriction to which the roots are subjected. If long and successful fruiting be the object aimed at, plant inside, let the roots have plenty of good material on which to feed, and, at the same time, see that they are in no way prevented from passing to the outer border, which should be well prepared for their reception. In erecting houses in which the Vines are to be planted inside, the foundations are generally set on arches, through which the roots pass into the outer border. There is, however, often too much brickwork, against which many of the roots run, and, following the building downwards, become cramped and crooked and otherwise permanently injured. In such cases it would be almost better to confine the roots inside altogether than to prepare an expensive border which cannot be utilised. It is sometimes considered bad practice to have the roots at a great distance from the stem, and various modes have been adopted to keep them at home, as it is called; but, so long as they are not twisted or put out of their natural course, it is much better to have plenty of straight healthy roots outside than to have a quantity of distorted ones near the stem. Instead of supporting the fronts or sides of Vineries on brickwork, as has hitherto been done, a better plan is to use cast iron pillars placed about 10 ft. apart, resting on a small block of stone or brick; between each of these there is plenty of space through which the roots may freely run, and standards of this kind are quite strong enough to support the house. A Vinery thus constructed has lately been erected at Aske, the Yorkshire seat of the Earl of Zetland. It rests on standards of this kind, and forms a most serviceable span-roofed house both for Grapes on the roof and for plant-growing under them on the floor. J. Muir.

Picking over Apples.—For years I practised, says a correspondent of "The American Cultivator," picking over all my Apples two or three times during the winter, and flattered myself that I was very discreet in so doing. Last year I had a good many, and grew slack in duty, being busy about many things, and never touched them only as we used them. They kept until July, and were in splendid order. It seems decaying Apples do not injure their neighbours. This year Apples are poor and scarce, but keep well. I think in future I shall put my Apples in a cool, dry place, and disturb them only as I want them for use. [Will some one give an opinion with regard to the advantage or disadvantage of picking over Apples?]

Rotation of Fruit Tree Stocks.—Mr. Fish, in a recent article on renewing orchards, says:—It is merely a loss of time to plant new trees on the old soil. They will not—cannot grow. The earth gets tree-sick, and the only cure for this sort of sickness is a change of crop or a total revival of the earth. There are some who try a mere change of place for the trees. They plant the young trees between the old rows or spaces, forgetting that the surrounding soil has been exhausted by the roots of tree food. It has occurred to us that, provided the soil were suitable, a new stock might be tried with a probability of success. The Paradise, for example, being a surface-rooter, might be tried after the Crab, in cases where a total change is not possible.—W. K.

Hills v. Hollows for Fruit Culture.—President Parmelee, of Michigan, gives his experience of the difference of temperature in various localities as follows:—"I have long held and preached that hollows, from greater cold, are utterly impracticable as sites for orcharding. People will have it that the different temperatures at different points are owing to the variations in thermometers, and a council of instruments was called at the Farmers' Club, at which were present ten thermometers, and the trial showed an almost perfect agreement. Mr. Brinkman brought his up to my residence one still cold evening, and, with mine, was hung on a twig near the house. After ample time to settle, we hung them in my Cherry orchard, lower ground, and they went down 9°. We then carried them about a stone's throw west, to the top of a ridge, and they came up 8°, and the difference of altitude was only 11 ft. We then took them down on the little lake below my house, and they sank 23°. On my return home my thermometer came back to the starting-point."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Earliest Figs.—Allow me to say, in answer to "K. S." (p. 222) that I have noted the following six sorts in several localities, all early and of good size and flavour, viz., Brown Turkey, De la Madeleine, Bourjassotte Grise, White Marseilles, Brunswick, and Castle Kennedy. Preference might be given to the first three.—J. Muir.

New Large Currants.—The "Fruit Recorder" says it would rather give £10 per thousand for the Cherry, Versailles, and White Grape Currants, than take the common Currants as a gift. This remark of course refers to their value in markets. The large sorts sell in Buffalo for 6d. or 7d. per quart, while the smaller ones bring only 3d. to 4d., costing more for picking, and as much for packages and express charges.

Too Many Varieties.—Ninety persons out of every hundred who set out trees for home use or for market indulge in too many varieties. This one error has ruined more fruit-growing enterprises than all other causes combined. Nurserymen propagate their hundreds of sorts simply because a majority of their customers do not know what they want, and will not take the advice of those who do.

Keeping Back Pot Vines in an Ice-house.—Mr. Temple says, in the "Gardener," that he thinks it probable "that pot Vines may be retarded till autumn by the agency of an ice-house or other means, and then taken in and treated as pot Vines are generally managed for early forcing." [We know it is no easy matter to get very early Vines to break and fruit freely; and if a number of canes grown in pots could be kept back till October, a difficulty would be overcome.]

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Vineries.—Vines that were recommended to be started early in February, and that have now broken, may have the temperature raised a few degrees, giving a little air every mild day, but being careful, as soon as leaves are formed, that cold draughts are not admitted, or free development will be seriously interfered with. Amateurs who have a Vinery of this description at work will naturally be anxious to make the most of it by growing other things with their Vines. Some French Beans may now be sown and placed on shelves near the front lights or overhead on the back wall; for these either narrow boxes 10 in. deep, or 10 or 11 in. pots, may be used, draining them and half filling with good ordinary soil, and then sowing the Beans thinly, covering them with an inch of soil, and, when they are up and have made some progress, adding more soil, into which the stems will throw out roots that will greatly strengthen them. When grown in this way it is necessary to use considerable care to prevent red spider (to which the Beans are so liable) from getting first established upon them, and from them to the Vines. To obviate this, as soon as the Beans have got to such a size that they will bear it, the syringe must be freely used every day, turning the plants round continually so that the water may get to all parts of the leaves—by no other means can this little pest be kept under. For growing in this way Paris Red, Flageolet, Fulmer's Early Forcing, or Osborn's Forcing will be found free croppers and good in quality. Potatoes may also be successfully grown in pots 12 in. in diameter; these, as for the French Beans, must be drained, an inch of coal cinders will be as handy and answer the purpose as well as crocks; use ordinary soil (if new, all the better), with a little rotten manure added; half fill the pots, putting one Potato in each, and cover with 2 in. of the soil, filling up when growth has further advanced. Stand them where they will get as much light as possible. The soil, if heavy, will be benefited by some leaf-mould being added to it; it should not be used when too wet, as when in this condition neither of these vegetables grow kindly in it. A few Strawberries in pots may also now be started, if such were prepared last autumn; but in all cases the introduction amongst Vines of such subjects as the above require care in seeing that they do not interfere with the well-being of the Vines, or the crop of Grapes for the season may materially suffer.

Kitchen Garden.—During the ensuing few weeks more sowing of vegetable seeds, &c. is required than at any other period of the year, but, as has been previously suggested, even when the most suitable time for sowing any particular crop has arrived, it is more expedient, in a wet season like the present, to defer that operations for a week or so, when a great difference in the condition of the soil will, in all probability, have been effected; this more especially applies to situations where the land, despite all that can be done by draining, is retentive of moisture. Where the opposite conditions exist, it is the best practice to sow and plant early, for in such soils it often happens that unless the crops get an early start, to enable them to make considerable progress before the hot dry weather, the latter precludes the possibility of a successful development in the greater number of plants. In the preparation of the ground for culinary vegetables, it should always be borne in mind that soils different in character require to be differently prepared. When the surface-soil is light, especially if the subsoil be of a gravelly or sandy nature, deep rooting crops, like Peas, Carrots, Beet, Parsnips, and Onions, should have a considerable amount of manure dug in deeply when preparing the ground for the roots to feed upon in dry weather. In a garden of this description I once had to manage, for the crops of Peas to come in during the summer and autumn, we opened trenches for the rows as for Celery, but deeper and not so broad—15 in. wide and 18 in. deep; in the bottom of these we placed 6 or 7 in. of marl and well-decayed manure mixed in equal proportions, the marl having lain for a few months exposed to the mellowing action of the weather. By this means the crops exceeded double the quantity that I had found it previously possible to obtain by manuring in the ordinary way, and they bore well late on in the autumn without being affected with mildew. Where marl cannot be had clay will be found a good substitute, aërating it and mixing with manure in a similar manner; if neither marl nor clay be procurable, any new soil of a heavy nature can be used. Amateurs may possibly think that the crop will not be worth the additional labour of such special preparation, but not only will half the breadth of ground so treated produce much more, but the land will be permanently improved. For the other things above-mentioned it is also necessary in light over-dry soils to dig in plenty of manure so that the roots may be well fed during dry hot weather. Dig over ground that was trenched in the autumn or turned up roughly, well pulverising the soil.

Carrots, Onions, and Parsley.—A small breadth of Carrots should be sown on a sheltered border; as with other early sown seeds, putting in more than would be required later on. In all cases, as previously recommended, sowing in rows, which, although it takes more time to put in the seeds than broadcast, still offers such facilities for thinning the crops and using the hoe amongst them, that it saves time in the end, as well as being more conducive to their general development. Onion ground that was trenched in the autumn, and had at that time anything of a rank nature, such as fowl or pig manure, spread on the surface with a view to its being mellowed by exposure, should have this pointed in, and if a sprinkling of soot and salt be added, it will be a great improvement. Take advantage of the first dry day after the ground is prepared to sow the seeds, a good portion of which should consist of late keeping kinds, such as Brown Globe and James's Long-keeping. At the time of sowing the Onions, put in a pinch of Parsley seed at intervals of 2 or 3 ft. in every third row; it will in no way interfere with the Onion crop, and will be found to grow free from canker at the root, vigorous and hardy, so as to stand well the inclemency of the weather, and will be found very different to Parsley crowded together or grown in places where it is shaded by anything else.

Parsnips, Broad Beans, Lettuce, &c.—Parsnips should be sown as soon as the ground is sufficiently dry. It is not desirable to select the best soil or situation in the garden for them, this should be reserved for more important subjects. Another sowing of Broad Beans may now be made. In addition to the already well-proved sorts, Seville Long-pod may be relied upon as a most prolific bearer, good in quality, the stalks bearing almost down to the ground. A little Lettuce should be sown, both Cos and the small Cabbage variety, Tom Thumb; the latter will come in before the Cos. More Radishes should be put in, this time dispensing with the litter over the beds; also Mustard and Cress, if possible, under shelter of a wall. Plain Cress will, as a rule, succeed better than the double kind.

Cabbage and Cauliflower.—Now put in a little Cocoa-nut Cabbage and Red Cabbage; these latter will do better than the autumn-sown plants in parts of the country where the rainfall is generally light, as in such localities, unless water be supplied liberally in dry periods, they often become stunted; and when the autumn rains come a second growth is made, that very often causes many of the hearts to split, which of course renders them useless for keeping. Choose a dry day to stir the soil amongst autumn-planted Cabbages, drawing some up to the plants; this is necessary if they have suffered from the winds of winter so as to have loosened their hold on the soil round the stem. Some early Cauliflower seed should also be sown, as likewise a pinch of Veitch's Autumn Giant Cauliflower, and Snow's Winter White Broccoli. Amongst the perplexingly numerous varieties of Broccoli advertised, Snow's may be relied upon as one of the best, and is indispensable to keep up a supply; the same may be said of Veitch's Giant Cauliflower, which is deserving of the high recommendation it has received from all parts of the country; but, to ensure it for as long a season as possible, it ought to be sown several times during the spring, the first of which should be at once.

Potatoes.—It may be well to remind amateurs that after experiments innumerable have been tried with Potatoes to enable them to withstand disease, or with a view to assist their escaping its attacks, little or nothing has been effected except by showing clearly that no dependence can be placed upon any method but growing early and second early kinds with the seeds properly prepared by being wintered cool with as much light as possible to produce strong tough sprouts, which will render them less liable to get injured or broken off in planting; by the avoidance of rank stimulating manures; and by planting sufficiently early to admit of the crop being ready for lifting before the time that the disease usually becomes virulent. With this view I should advise that all garden ground intended to be cropped with Potatoes—as soon as it is dry enough to be prepared for planting — should immediately be got ready. In early planting there is undoubtedly some danger from spring frosts after the plants appear above ground, but, by keeping them earthed up, the danger may be mitigated, and far less mischief will occur from the young leaves being slightly injured by frost, than by the crop being late and exposed to entire destruction by disease.

Stoves.

The present month will be a busy one so far as plant cultivators are concerned, for an examination of the whole stock should be made in order to ascertain in what condition it is in to decide as to which plants it is necessary to re-pot, and which not. Where an increase in the size of the pot is undesirable, the addition of a little fresh soil will be sure to be beneficial if it can be added without injury to the roots. Any plants that have been cut back, or that are now breaking, such as Justicias, Eranthemums, Thyrsacanthus, Cyrtantheras, and others of that class, should be shaken out and re-potted in smaller pots in rough rich soil. All plants, to be subjected to this treatment, should be taken in hand directly they break, or before the shoots have attained much length, as, when that is the case, they are sure to flag and suffer injury. Others, recently cut down, should be kept dry at the roots till they begin to break, when a good watering will suffice to push the shoots sufficiently forward to render them ready for re-potting; or, where plants of different kinds have to be grown in one stove it will now be necessary to group them according to their requirements, such as separating those that require shade from such as enjoy and are benefited by full sun-light. All recently potted plants, especially such as have been much disturbed at the roots, ought to be placed where they can have proper shade afforded them, and be well syringed overhead until they have become established. With the cold cutting winds usually prevalent at this season, and often accompanied by bright sunshine, air must be admitted with extreme caution. In most cases it will be better to allow the thermometer to run up rather high than to open the roof ventilators at all, unless the external air be soft and genial. The state of the weather should be closely watched, in order to ascertain, if possible, what the day is likely to turn out before fires are prepared to warm the pipes, as it is an easy matter to raise the temperature sufficiently to suit the light afforded in the absence of sunshine, or to assist the latter. Where air has to be admitted, owing to the pipes giving off heat during the existence of sunlight, the whole of the moisture is soon driven out, and the plants show the injurious effects produced upon them by the flaccid, exhausted appearance which they present after a few hours of such treatment. The very fact of the interior of a stove being hotter than the external air secures for the house and its occupants a certain amount of ventilation that, in most cases, is amply sufficient during at least a portion of the winter and spring months. When strong heat is required, as is the case with most stove plants, and many others that are forced to get them to bloom early, as much of it as is possible should be got from the sun's rays, as that is always more genial and suitable to the growth of plants than such as can be obtained by any other means. Independent of the beneficial results accruing to plants by adopting the above course, it is to be recommended on the score of economy, which, at the present price of fuel, ought to be a great consideration with all. Be this as it may, I am quite of opinion that less ventilation in connection with plant-houses during the winter and spring months would have beneficial results to the plants themselves. Of course some discrimination in this, as in most other matters, is necessary, as some plants, Heaths for instance, require a good deal of fresh air, and dislike a close confined atmosphere, and I may therefore observe that I intend my remarks to apply more especially to such as require a certain amount of artificial heat. As the temperatures of stoves and other plant structures are now being gradually advanced on account of lengthening days, and the consequent increase of light and sun, a proportionate amount of moisture, both at the root and in the atmosphere, must be kept up to suit the requirements of the different occupants. This should always be regulated according to the state of the weather and the amount of artificial heat. On bright sunny days it is almost impossible to have too much, and the air may then be heavily charged by syringing freely, wetting the plants overhead, and damping the floor, walls, and other available surface.

Allamandas.—Any of these that are on trellises should be elevated by placing them on inverted pots, to bring them as near the glass as possible and afford light and air to the lower shoots. Before attempting to train or tie in the young wood of these it should be allowed to harden a little, or it is apt to break out at the base, much in the way in which the young shoots of Vines do. Later plants for succession now breaking should be shaken out and potted in good rough compost, consisting principally of fibry loam with a few lumps of peat and a dash of sand to keep it open. With plants that require such abundant supplies of water while making their growth and carrying their bloom, it is almost impossible to have the soil too porous, as, when it is otherwise, it is apt to become water-logged and sour, besides being unsuitable for the roots of such a quick-growing plant as the Allamanda to penetrate with proper freedom. Where it is desired to increase the stock of these or to work up fresh young plants, the present is the best time for putting in cuttings. These should be taken off with a heel, much in the same way that Dahlia cuttings are formed; they should then be inserted singly in sandy soil in small pots and plunged in bottom-heat, where they will soon root, after which they should at once be shifted on into larger pots as they require it. Although the Allamanda is not of much value for cutting, yet single blooms of it, picked off and placed in flat glasses containing damp Moss or Lycopod and water, last for a long time, and may be arranged with other flowers so as to have a showy and attractive appearance. As pot plants with which to furnish conservatories during the summer months Allamandas are most valuable, outlasting, as they do, many of the common and more hardy plants in the same position. They should not, however, be allowed to stand late in the autumn after the night temperature gets low, or they lose a good portion of the young roots, and then it becomes difficult to winter them safely.

Clerodendron Balfourianum.—This is another valuable plant for the purpose just named. In potting plants of this, use a soil consisting of at least two-thirds rough fibry peat to one of loam, which should be put into the pots somewhat loose, in order to allow the roots full play and the water a ready means of escape. Plants of this Clerodendron flower in a small state, and cuttings of it put in now are sure to be useful and make good plants for another year. Where the trellises on which these and other plants are to be trained are of wood and have become decayed at the bottom, they may be secured and steadied by running a couple of stout pieces of wire across the top of the pot, to be fastened to another piece run round just beneath its rim. To the ends of the cross-pieces the trellis may be tied, which will render it firm and steady. Wire trellis may be treated in the same way, and can be made almost immovable.

Euphorbia Jacquiniæflora.—As soon as the young shoots of this have attained a length of from 4 to 6 in., they should be taken off with a heel and be placed round the edge of a well-drained cutting-pot in light sandy soil, which should then be plunged in a good brisk bottom-heat. Unless taken off in this way with a piece of the old wood adhering, they are very difficult to strike, and not at all free in doing so even when that is done. As soon as a sufficient stock of cuttings are struck, cut back the old plants to within a few inches of the bottom, and place them in brisk heat, in order to induce them to break again, when they must be shaken out and re-potted. Where convenience exists for planting one or two out, so that they can be trained near the glass, they will afford a large number of heads of bloom for cutting, much longer and finer in every way than such as are usually obtained from pots.

Justicias.—There is always a great paucity of yellow flowers, especially during the winter months. The old but much-neglected Justicia flavicoma is one of the best and most effective at that season. To get plants of it of useful flowering sizes cuttings should be put in at once in brisk heat where they will soon root, and should then be potted on in light rich soil to induce them to make strong shoots, without which the individual heads of bloom will be deficient in size. When well grown, the Justicia flavicoma is a very effective and desirable plant to have as a winter bloomer. Justicia carnea is also very useful, but this has in many places been quite superseded by Cyrtanthera magnifica, a plant greatly resembling it, but altogether of a superior character.

Primulas.—Keep those from which seed is desired well up to the light on dry, airy shelves; and, to assist them to set, fertilize the flowers by using a soft camel-hair brush. To get early blooming plants for next winter, seed should be sown at once thinly in pans or pots filled with finely-sifted leaf-soil, or peat, mixed with a small portion of sand. If not thoroughly moist, water a few hours before sowing, and allow the pans to stand and drain before the seed is put in, after which slightly cover with moderately dry soil. Place a sheet of glass over the pan, and plunge the latter in slight bottom-heat to assist the seed to germinate, which, when treated as above, will not fail to succeed.

Plumbago rosea.—This is a charming free-flowering plant for winter decoration, and, although not so lasting as others having greater substance of petal, is exceedingly valuable for growing in small pots to fill vases for table decoration, a purpose for which it is well adapted on account of its bright red flowers, arranged in long graceful racemes. To obtain strong plants of it in 4 or 6 in. pots, cuttings should be struck at once, and then grown on in moist heat on light shelves, where the sun does not strike them with full force. One-year-old plants, if cut back and potted on after they break, will throw up a large quantity of flowers, which are sure to be appreciated when seen drooping over the sides of epergnes, associated with Lily-of-the-Valley or other choice blossoms. This Plumbago delights in a free open soil, and, in the case of plants in large-sized pots, it can scarcely be too rough. Two-thirds fibry peat to one of loam, with a little sand, will answer admirably. Drain well and water freely while the plants are growing, and ply the syringe overhead to keep them free from thrips, red spider, and other insect-pests.

Propagating Epiphyllums.—This is a good time for increasing the stock of these, either by grafting on the Pereskia or Cereus, or by cuttings on their own roots. Grown in the latter way, they are well adapted for filling baskets to suspend from the roofs of plant stoves, positions in which they show themselves off to great advantage. Cuttings root readily if inserted in sandy soil and placed on any light shelf in a stove or forcing house. Keep the soil dry till they begin to emit roots, unless they show signs of shrivelling too much, when a slight watering will be necessary. Although Epiphyllums will grow on almost any of the Cactus tribe, the Pereskia forms the most suitable stock for them, as they can be worked to any height, and be grown either as pyramids or standards. For table decoration, the latter are best, and the most suitable are such as are worked on stems of from 12 to 18 in. high. Just a slit in the end of the Pereskia, with a strong branching piece of Epiphyllum placed carefully in it, and secured in that position, is all that is required. Before inserting it in the top of the stock, the scion should be cut in the shape of a wedge, corresponding in length with the slit made to receive it. This should be about 1 in., and when placed and tied round, it should be bound up with Moss to keep the cut parts from light and air. Thus treated, both stock and scion quickly unite and form useful compact heads, that, when in bloom, are objects of great beauty. To form pyramids, the scions should be inserted at equal distances apart up the stem of the Pereskia, say about 4 in. asunder on the different sides of the stock, so that the grafts do not form regular rows. Make a slight cut in the stock in a downward direction, extending nearly 1 in. in length, and in this insert the scion, which may be secured in its position by thrusting one of the spines of the Pereskia through it and the cut part, so as to keep them close together until they have become united. The whole of the stem should then be bound up with Moss, and kept well syringed to keep the grafts plump and fresh. Any old plants of Epiphyllums that have grown too large or that are irregular in shape may now be reduced or regulated. This may be done by breaking the branches at a joint, or pruning them out with a knife. Either way the plants may be reduced, thinned, or regulated to any size or shape desired, after which, if placed in brisk moist heat, they soon break again from the tips, and produce a great number of young shoots that, if well-ripened, are sure to flower from every tip. Any plants treated as above should, as soon as they begin to break, be partly shaken out from the old soil, and be re-potted in some good fresh fibry loam and rotten manure; the latter in the proportion of an eighth. Epiphyllums, like most other plants, pay for liberal cultivation, although at one time all Cacti were limited to a very spare diet, consisting principally of old mortar rubbish, given with the erroneous idea that such treatment induced a free-flowering habit. This can always be brought about by full exposure to the sun and light after growth is complete, and by limiting the supply of water at the root, so as to assist in ripening and maturing the succulent shoots.—J. Sheppard, *Woolverstone Park.*

Indoor Fruit Department.

Vines started in November will be swelling their fruit fast, and at this particular stage of growth should have a thorough soaking of tepid manure-water, one copious watering being preferable to the same quantity given at various times. Prevent the border becoming sodden by repeated heavy dampings from the watering-pot. Main leaves are preferable to laterals, and where two or three are left beyond the fruit, remove the laterals immediately they appear. Red spider generally puts in its appearance at the commencement of the stoning process; where such exists, wash the foliage with a sponge, using a little soft soap and rain-water. Let the temperature be 60° at night with air, and increasing by day 15°, or 25° by sun-heat. Keep pot Vines clean and well supplied with manure-water. Avoid overcropping, but allow them to carry plenty of foliage, otherwise the fruit is insipid. Eyes put in heat at the commencement of this month should be kept in a temperature of 60° by night, preserving those intended for budding or grafting by placing their ends in water. Pot them on, when the Vines have made a good leafage, to prevent them bleeding. Where Vines have pushed well, disbud as formerly advised, and gradually raise the night temperature to 60°. Keep 2 in. of leaves on the border, to prevent a water-beaten surface, and to admit of a more equable evaporation, allowing the steaming troughs to become dry where fire is the heating agent. During dull weather this will greatly prevent the progress of warts on the foliage, always so objectionable. Stop the side-shoots three leaves beyond the fruit. Tie down such Vines as are of a free-setting nature, leaving only the bunches intended to remain, and thin the clusters immediately they commence to swell. Where Vines are still unpruned, begin at once. Clean as previously directed, and use plentifully Thomson's Styptic to prevent bleeding. Look to Grapes still hanging either in the vinery or fruit-room, and remove all decayed berries. Avoid a high temperature; if dry, it can scarcely be maintained too low at this season.

Pines.—Where early fruit is in demand (if started under former directions, the Pine plants will now have bloomed), with the increased length of light now at command, a heightened temperature will greatly assist in bringing Pines forward. Examine carefully once a week to prevent them becoming dry; damp all available surfaces in the morning and afternoon, and shut up early with as much sun-heat as possible, sprinkling overhead in the afternoon when the weather is favourable; retain a bottom-heat of 90°, and do not have the temperature of the atmosphere below 65°. Pines in 7 or 8-in. pots, not already shifted, should now have the operation performed. Hand-pull turf previously prepared, retaining only the fibry portion, to every barrow-load of which add a 6-in. pot full of soot and a 12-in. pot full of bone-meal, and mix all well together; place in a warm house for twenty-four hours. Lay potsherds at the bottom of 11 or 12 in. pots, which cover with Moss, adding a layer of soot as a protection against worms. In turning out the suckers, remove all loose soil, and, if badly rooted, shake them out, extricating the bottom whorl of leaves before replacing, and allowing 2 in. for watering and top-dressing, after which ram the compost firmly. If not intended for winter fruiting, Pines should be placed in a bottom-heat of 80°, with a temperature not exceeding 65° during the night. Encourage all growths by day, and avoid overcrowding in the beds—2 ft. square is a good distance.—J. Hunter.

Figs.—It sometimes happens that these are confined to small spaces built in with bricks; the roots may, therefore, be matted at the bottom, and, though the soil may be in good order as to moisture near the surface, those roots which are to do the chief part of the work for the crop may be starving. A soaking of guano or other good manure-water may, therefore, be given often. Maintain an even temperature, taking advantage of all the sun-heat possible.

Peaches and Nectarines.—At this season the application of fire-heat and proper ventilation are matters of great importance, as the combined influence of sun and artificial heat acting on the tender foliage at the same time, and perhaps a current of cold air passing through the house, are evils which the best and most judicious management in every other respect will do little to counteract. This is one of the most fertile sources of the increase of insect-pests and fruit-dropping. Avoid a meeting of fire-heat with sunshine, when there is a likelihood of a bright day. Stop the artificial heat as soon as possible. Aim at a moderate temperature, with a little air, in preference to being compelled to drive the moisture out of the structure by opening the ventilators to reduce excessive heat. Drafts through the plant or fruit-house, especially when the wind is cold and biting, severely test the constitution of the trees as well as the safety of the crop. "Air early and shut up early" is advice very generally given, the soundness of which we have never seen disputed. Syringe freely early in the morning, also in the afternoon, when the state of the weather demands it. If insects appear, they ought to be dealt with promptly; Clarke's Insect Destroyer is cleanly, safe, and very destructive to insect life. Well-drained borders—inside—must have plenty of water, and when the trees show signs of weakly growth from over-cropping or from insufficient nutriment, let manure-water be given, noting carefully that it reaches the roots; guano and soot mixed, and water added till the liquid is pale brown in colour, may be used as a safe stimulant; but when the soil is heavy and close, the drainage insufficient, and the roots have suffered in consequence, liquid manure would then only increase the evil. Thin the fruit to one Peach to every square foot, and Nectarines a fourth thicker in the early house. Disbudding must be assiduously followed up as formerly recommended, and where any shoots show a tendency to become gross they should be stopped or taken out, commencing at the tops of the trees, then the central portions, and lastly, the lower parts; but intervals of a few days must elapse between each thinning. Succession-houses in flower must have careful application of the syringe; sprinkling the floors, so that the surfaces may become dry once a day, is a practice which prevents much of the flower-dropping, which so often vexes inexperienced cultivators, and 55° at night need not be exceeded, except when the weather is very mild. Late houses, for the fruit to come in before the crops in orchard-houses and on open walls, may be shut up; the fruit being forwarded chiefly by harvesting sun-heat, only using fuel when the house falls below 45°. Standard and pyramidal trees in pots should not stand where their roots are liable to injury from drying currents; straw or hay bands neatly twisted round the pots generally prevent sudden changes of temperature being felt at the roots; a band of zinc placed within the rim of the pots, and filled up with soil enriched by cow or sheep manure, will do good service where the roots are matted on the surface of the soil; the same treatment applies to orchard-house trees. When the roots are confined in limited space, fumigate the house several times in the week before the flowers open; syringing the trees overhead with quassia water two or three consecutive mornings is a good preventive of aphis, but fine weather must be chosen, especially when the structures are unheated. Shake the trees once or twice daily by tapping them to circulate the pollen when flowering is going on.

Cherries.—Flower-buds commencing to swell must have an even temperature; 45° need not be exceeded, except in very mild weather; the syringe may be used twice daily, but air must be admitted more or less every day. Trees in pots will by-and-by require plenty of water, and if a small quantity of guano be given with each watering, the fruit will swell to a good size. Preventing the trees from becoming crowded, is a matter which should not be overlooked.—M. T.

Vegetable Forcing.

Cover up Seakale for successive supplies; pots and heating material are not now required; sifted cinder-ashes placed in heaps over the crowns ensure successful growth and blanching. Rhubarb will now grow without any forcing, but may be advanced by placing over the crowns anything at command in the shape of pots, tubs, or boxes. A last batch of Asparagus should be got in, and beds in bearing be stimulated by watering with warm water, and renewal of linings. If the necessary pit or frame room can be had, the next succession of French Beans should be sown in them, rather than in pots or boxes, a gentle warmth, such as that from Oak leaves, 2 or 3 ft. in depth, is sufficient bottom-heat, which should be covered with 9 in. of light rich soil, and the Beans sown thinly in rows 1 ft. apart, adding fresh mould as growth advances. Make up hot-beds for Cucumbers, which will be useful for advancing the growth of many kinds of seedlings till the Cucumbers are ready for planting, such as Capsicums, Tomatoes, Celery, &c. Keep up a constant succession of Basil, Tarragon, Mint, all herbs, and small saladings, by methodical attention thereto.—W. Wildsmith, *Heckfield*.

Kitchen Garden.

The extraordinary heavy and continuous rainfall that has prevailed for so long a time has seriously interfered with the work in this department, but now that fine weather may be expected, let every effort be put forth to bring up arrears, and especially in the matter of seed-sowing. Parsnips, Parsley, Onions, Early Horn and James' Scarlet Carrot, Turnips, and early kinds of Potatoes should be got in directly the ground is in a workable condition. The hints, &c., as to sowing or planting that have been given in former notes should be referred to and carried out. Preparation of ground, &c., for the main crop of Potatoes should be made at once. After carefully examining the merits and demerits of early and late planting in reference to the Potato disease, I have come to the conclusion that early planting, which naturally necessitates an earlier maturation of the tubers, is to a very great extent a preventive of the disease. Early planting has but one great drawback, viz., the liability of the haulm to be cut down by late spring frosts, to obviate which, immediately they show above ground, the soil should be drawn over them, and this should be repeated so long as danger lasts. We have practised this system for years, with favourable results. It will now be safe to plant out Cauliflowers on warm borders, moving them carefully from the frames with balls of earth, and planting them with a trowel, in deep drills 2 ft. apart, which latter serve as protectors at this early season. The ground for Cauliflowers cannot be too rich, but, if somewhat poor, as soon as well established, a good soaking of liquid manure should be given. If liable to "club," a good preventive is to put in, with each plant, a handful of different soil to that of the garden; coal ashes, or old mortar rubbish, are also good preventives. An early dish of Green Peas is always highly esteemed in every establishment, so that it is worth while incurring a little extra labour to get them even a few days earlier than usual; therefore, plant out at once, in the warmest position that can be found in the garden, those that have been sown on turf or in boxes, after which assist them to start into growth quickly by protecting with evergreen boughs, replacing these in due time by proper Pea-sticks. Successional sowings should now be made, and should consist of two or three varieties, which, though sown at the same time, will then come in at different periods. The following are all proved good kinds, viz., William I., Advancer, Best of All, Premier, Veitch's Perfection, Ne Plus Ultra, and British Queen. The new Pea, Dr. Maclean, introduced to cultivators for the first time this season, is likely to prove one of the very best in cultivation. Having had last season an opportunity of seeing its growth and testing its quality, I believe that, for productiveness and quality combined, it will be found unequalled. Peas require growing space according to their height, and it is a good plan to give them abundant head-room and plant Cauliflowers or Coleworts, or sow Spinach between the rows; thus no ground is wasted and both crops are benefited. The three most valuable green crops for obtaining supplies throughout the year, and which never fail through any cause, we have repeatedly proved to be Brussels Sprouts, Dwarf Curled Scotch Kale, and Cottager's Kale, so that these kinds should have precedence over all others, especially in gardens where Broccoli is an uncertain crop, which it generally is in low-lying, damp situations. The above-named three kinds of Brassica should be sown at once; indeed, it is far preferable to sow Brussels Sprouts in the autumn, thus giving them time to get extra long stems, and well furnished with plump sprouts, before the cold nights check their growth. Seakale that has been forced in the open ground should, as soon as cut, have the heating material removed, and let the soil be deeply dug and manured, any old roots dug up by the operation, also those that have been lifted for forcing, being reserved for making a new plantation, which should now be commenced on heavily manured and deeply dug ground, according to the following plan:—Cut the roots into lengths of not less than 4 in., and as thick as can be procured, dibbling them in, in rows 2 ft. apart and 18 in. from set to set, and deep enough to ensure the top of each set being covered with 3 in. of soil, and next winter they will be fit for forcing, either in the open ground or by lifting. The above mode of renewing Seakale plantations is preferable to that of raising seedlings, though if the propagation of Seakale by the latter process be desired, the seed should now be sown in drills 1 ft. apart, and transplanted, as soon as fit to be removed, to the distances recommended above.—W. Wildsmith.

ADVANTAGES OF A FIRM ROOT-RUN FOR FLOWERS, FRUIT, AND VEGETABLES.

It may at first sight seem inconsistent to recommend deep tillage and at the same time insist upon a firm root-run; but the two things are quite compatible, and, I am convinced, the more completely both can be carried out the greater will be the success. Manure and cultivate well and deeply by all means, but do not plant or sow land when in a loose state. Of course I am aware there is no rule without an exception; for instance, Potatoes, and almost all plants, such as the Yam, that produce their tubers or edible roots completely under ground, are exceptions to the rule I have named in a limited sense, for soil can hardly be stirred too deeply for them, and if allowed a few weeks to settle and to benefit by exposure to the atmosphere, it will be sufficiently consolidated for the operation of planting to be commenced. Where the soil, rainfall, climate, and local conditions of a country like Great Britain vary so much, no one can lay down a hard-and-fast rule to suit all places, and to do so would be as empirical as to prescribe one medicine for all the complaints of the human race. Fruit trees of all kinds will thrive better and come sooner into bearing on firm land well prepared by a proper admixture of soils to a sufficient depth than if planted in beds of loose porous earth. Planting without consolidation or in soil unduly porous may seem a success at first—the growth may be rapid, for the roots, finding themselves in a loose permeable medium, rush through it, as it were, and produce a correspondingly rampant growth in the branches; but if the prepared site had been made firm the roots, instead of rushing through their food, would have ramified and multiplied in it, producing short-jointed wood that would bear fruit quickly. I believe if the soil has been properly loosened and intermixed it is impossible by any mechanical means, such as treading, rolling, or even ramming, to make it too firm for fruit trees. We all know that if we dig a hole in firm unmoved ground it is impossible to make the hole contain all the soil again, and yet roots will penetrate through the hardest ground if there be any food to be got at, and the trees will apparently be all the more fruitful when such is the case. In Vine and Peach borders that are often (the former especially) recommended to be made of porous material, and hardly a foot allowed to tread upon them, the roots are through and into the firm land beyond much sooner than is generally supposed, and when that happens to be of an unfavourable nature, lifting and root-shortening should be resorted to to bring them back again. Some people have a notion that frequent digging amongst fruit trees for the purpose of aërating the soil is of material benefit to the trees. Hoe and stir the surface by all means, and if the trees show signs of impoverishment, dig in manure—even if by so doing a few fibres may be destroyed, the increased nourishment given will soon compensate for that—but in well-drained land, after the trees are well established, I think it is preferable to leave Nature to herself. When the ground is fully occupied by active roots, there is no fear of stagnation; there is rather a fear of a lack of moisture than of a superabundance, for where water will go air will follow. No further aëration for the soil is needed by the roots of trees than what they can acquire by their own action, and the constant movement of fluids that takes place in drained land. All vegetables, such as Onions, Turnips, Cabbages, &c., that produce their edible portion above the ground progress more favourably in firm land, provided it has been some time previously deeply worked and made rich by manuring, &c. In the flower garden, if the surface of the land be dry, giving the bed a good treading before planting will be found of great advantage as regards the future development and progress of the plants, especially if it be freshly dug and the soil of a porous nature. E. Hobday.

"THE SATURDAY REVIEW" ON MODERN GARDENS.

[There is a curious article on this subject in the "Saturday Review." We reproduce it, as it is well that all specially interested in horticulture should know the drift of public opinion on their art; but we protest against its injustice and want of charity, and we omit some wholly unwarrantable statements concerning gardeners, which nobody who knows anything of them as a class could have written: we may add that we are acquainted with many gardeners who would willingly go in the right road, if permitted. All gardeners, with any real knowledge of their art, love variety and nature in a garden, and only require a little encouragement to break away from the artificial and the merely fashionable. No doubt there is a certain type educated wholly under the influences of "bedding out," who will have some difficulty in escaping from its limitations, but even from these we may hope much, for the love of the natural and beautiful is innate in all gardeners who are interested in their work, and it only wants developing.]

The apostles of art in the household, having now managed to persuade fashion to follow in their train for at least a time, will have leisure to turn their attention elsewhere. It would be well if they could be induced to step outside the well-cared-for dwelling-house and engage in a crusade against the modern gardener, a tyrannical and prosaic creature, who holds the same position amongst the flower-pots that the upholsterer does amongst chairs and tables. Our gardens have degenerated for precisely the same reason that our mason-work is commonplace, and our wood-work either distorted by objectless turning or painted in imitation of what it is not. Ignorance and want of taste in those who have money to spend must always have a fatal effect upon every thing produced. Rich people buy stucco palaces, because they have not learnt anything about architecture, and could not appreciate the difference between stone and plaster if they tried. They give orders for costly furniture, but as they have only a feeble idea of what they want, and scarcely the foggiest notion of what they admire, they leave these knotty points to be solved by some firm in whom a titled acquaintance has recommended them to have complete confidence. They value their houses and contents in exact proportion to what they have been made to pay for them. It is precisely the same with their garden. They know nothing about flowers, and can only judge of the merits of their pleasure-grounds by the length of their bills and the number of men they keep employed. It never occurs to them that, just as a drawing-room, however expensively furnished, loses its fascination and air of comfort if left entirely to the care of the housemaid, so no garden can be at all satisfactory without the nameless charm that only can be given by the superintendence of a person of taste and cultivation. It is to be regretted that a larger proportion of those who live at their country places at least nine months of the year, and have nothing particular to do during those nine months, should not take up the pleasant pursuit of artistic gardening, and give to their own family and their friends the pleasure of seeing Nature at her best. At first sight one might suppose that a young lady would feel as much interest in the Roses that grow in the borders as in the artificial ones she places in her bonnet. But here certainly a difficulty does arise, owing to the intolerable position which the ignorance of employers has enabled our gardeners to assume—a position analogous to that taken by our cooks. The ordinary modern gardener, whose only knowledge of plants has been acquired by working in a nursery-ground,* must appear to a real lover of flowers the most insufferable mixture of conceit and ignorance. He makes no attempt to learn how to keep the pleasure-grounds in beauty all the year round, and the kitchen-garden well stocked with necessary crops; on the contrary, his only ambition is to see his name appear on prize tickets at some neighbouring flower-show. He tries to enforce the law that none of the family are to cut the flowers or touch the fruit; but if the lady's-maid happen to be pretty, she will find no difficulty in appropriating the earliest Peach and the most cherished Tea Rose. He cannot, however, bear to see anything given away by his master, and would rather let the Plums spoil on the tree than pack them in a hamper to be sent as a present. He prefers to spend all his energies on producing a few sticks of Celery earlier than anyone else, and a monster Gourd which no one can use. It is rare to see a garden that is under the complete control of an ordinary gardener in which the supply of small fruit admits of the proprietor giving away generously to his poorer neighbours; yet no modern gardener would refuse to force pots of Strawberries, so that he might send in a dozen tasteless specimens for a dinner-party. Amongst the flower-beds he is simply unendurable, as his theory of gardening consists in arranging everything in rows or patches, and on no account allowing any plant under his charge to display the cloven foot of natural habit. To him even a creeper growing at its own sweet will is an eyesore, and he has no opinion of such a Rose as the Cloth of Gold, which refuses to thrive when pruned. A pyramidal Azalea, the shape of a haystack, and so covered with bloom that not a single green leaf is visible to break the monotonous uniformity of its shape, is to him the perfection of art and beauty. In fact, no plant is worth much unless it requires to be kept in a hothouse all the year round. A flower that can grow without assistance is as little entitled to admiration or respect as a lady who does not require a maid to arrange her hair. He hates a Primrose by the river's brim simply because it thrives without being transplanted every year, and, no matter how severe the season, bursts forth in bloom to be freely plucked by passers-by. The finest carpet of wild Hyacinths or starry Windflowers is to him mere trash, the tallest and most pearly-white Foxglove only an awkward, lanky weed, to be pulled up and thrown on the rubbish-heap. He disclaims all acquaintance with our common perennial plants, on account of a vulgar way they have of growing anywhere, and a facility for reproduction quite contemptible. He digs up the Monthly Roses, because they are not sufficiently double to please his artificial taste, he burns the wild Honeysuckle, which crept through the hedge so prettily and dared to make acquaintance with aristocratic bedding-out plants. He invariably chooses the hottest part of the day for transplanting and watering, and gathers the fruit when it is raining. He takes possession of every green thing, and resents as an insult the slightest interference. When a suggestion is offered he perhaps replies that, if he is not supposed to know his own business, he had better go elsewhere. Unfortunately he is only too well aware how helpless his employer would feel if left with only a common labourer to whom he had to give directions; yet the amount of knowledge necessary to enable a lady or gentleman to train an intelligent working-man is easily acquired. It is possible to have a charming garden without a greenhouse, and plenty of wall-fruit with only the help of an experienced person to do the pruning. It is the attempt to have vegetables and fruit out of their season, and to cultivate plants which cannot be acclimatised, that makes our gardens troublesome, expensive, and unproductive.

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*He is a fortunate gardener indeed, who learns his business in such "nursery-grounds" as those of Veitch or Backhouse, or Van Houtte or Loddiges that was.—Ed. Garden.

[The writer then condemns Miss Hassard's book, which, however, is altogether good in its tendency, as her arrangements of flowers are tastefully and naturally disposed. It is to be regretted that the tasteless and objectionable fashions are not the subjects denounced in such articles, and not the gardener. It is for the owner of a garden to say whether he wishes ribbon borders or a variety of hardy plants, whether he wishes hothouse plants or shrubs and Roses. In many cases the gardeners are compelled to adopt the formal arrangements for which they are denounced.—Ed. Garden.]

FLOWERS FOR THE WOODS.

The decoration of our woods and parks with subjects of a floral description other than some of the more ornamental shrubs and trees, and with these only to a limited extent, is a matter which has as yet received scarcely any attention from landscape gardeners and others; but it is nevertheless worthy of consideration, particularly in these days, when we have at our disposal such a wealth of hardy flowering plants well fitted for the purpose. Few scenes strike the rambler in the woods in early summer so much as those sheets of azure produced by the common wood Hyacinth, which abounds in some localities to such an extent as to cover the ground uniformly for miles under the trees, producing, in contrast with the fresh greenery of the woods and undergrowth, quite an enchanting effect. In other places whole tracts are covered with the stately Foxglove which thrives amazingly in the shade; and, when the red, white, and purple varieties are mixed, the effect is rich and telling even at a distance. A bank of Primroses or Snowdrops everybody has of course seen and admired, and there are certainly few plants that brighten up the glades in the wood like the Primrose, which, when the quarters suit it, is quite capable of taking care of itself, and not likely to perish in the struggle for life. These, however, with the Anemone, Violas, and a few other species, are about the only conspicuous floral denizens of the woods and fields in this country. The beautiful Parnassia palustris, which we have gathered in abundance on the margins of some of the Scottish lochs, though restricted in its habitat, is a gem, however, that deserves special mention as a subject for planting in marshy situations; and a cold clayey soil seems to suit it as well as any.

To swell the list of subjects suitable for our purpose we must resort to the herbaceous border, confining ourselves to those species which, while they are conspicuous in habit and flower, are likely to adapt themselves to circumstances, and hold their own—to become naturalised in fact. Among Grasses we may mention the Arundo conspicua and the Pampas Grass, both of which have already popularised themselves to some extent as covert plants. They should be planted in masses, and always in dry situations. The Pampas is wonderfully hardy on a dry sub-soil, but wet is fatal to it. The Arundo is much hardier, and will succeed where the Pampas Grass fails, but it is a much less striking species. Of flowering herbaceous plants the Tritoma grandis ranks among the first. Robust in habit, hardy, not liable to be attacked by game, and brilliantly conspicuous by its tall, bright, flame-coloured spikes—thrown up in great profusion in October and November—it has no equal for effect and showiness. It should be planted in masses in open spaces in the woods where the soil is not wet, but it will grow on any tolerably good soil, and may be left to take care of itself. The plant is now cheap when bought by the thousand or hundred. Though not an aquatic, it is suitable for planting near lakes or ponds, not the least pleasing effect produced being the reflection of the flower-spikes in the water. We have before mentioned the Foxgloves, which are, if anything, better adapted for the purpose in view than the Tritoma, and all the cultivated varieties may be raised on the ground from seed sown broadcast, but if the surface of the ground were just bared and scarified a little with a rake, the plants would get a little start. The common white Lily (Lilium candidum) is another noble subject. We have seen it planted extensively in some demesnes where it could receive the little attention it required; but judging from its vitality, and the way the plant grows and blooms annually for many years in neglected cottage gardens, where it is a special favourite, it might be trusted, when once established, to hold its own. Its sweet perfume is distributed far and wide when planted in good-sized clumps here and there. A dry and deep soil suits it best, and, so far as we have noticed, rabbits are not partial to it. One severe winter they ate many Wallflowers and Carnations growing beside the Lilies, not touching the latter. The Tiger and Martagon Lilies might also be used if desired, but we restrict the list to the most likely and easily-procurable species. The Daffodil and other varieties of the Narcissus, including the beautiful Pheasant's Eye (Narcissus poeticus), will of course occur to everyone, though they are not by any means either so general or so plentiful in our woods as they might be. They are certainly ornamental, easily propagated by divisions of the roots just before they die down, and they will thrive and bloom even in a thicket of undergrowth. The common Crocus, too, may be planted extensively. Probably the double Pyrethrums would all grow freely, and the handsome pink-flowered Spiræa would succeed as well as the common Meadow-sweet (S. Ulmaria), so abundant in some localities. To these we may add several of the most vigorous and ornamental Asters (Starworts), the beautiful pink and white Anemone japonica, Campanula carpatica—the blue and the white—two pretty and effective plants, and very hardy. The Polyanthus, with other cultivated varieties of the Primrose and the Auricula, would, no doubt, live and thrive beside the common Primrose, and might be planted abundantly near walks and drives; and so also might Violets of the robust and sweet-scented Czar type. Phloxes, Delphiniums, and such like, would also thrive untended; and so would the Iris, Lychnis, Chelone barbata—a very likely and effective subject, Potentillas of sorts, the Christmas Rose, which will grow anywhere, Solidago, the Valerians, Veronicas, and many others; but those named are common, easily procurable, and hardy, and would afford a display throughout the summer and autumn. In furnishing woods and parks with subjects such as we have named, it would be advisable, with the boldest and most conspicuous at least, to plant in masses and clumps in appropriate situations, notably such attractive species as the Tritoma and the Lily, to produce distinct effects; but all the varieties might be distributed indiscriminately along the most frequented paths, the margins of the woods, and other suitable places. The only danger herbaceous plants would be subjected to in such situations would be the attacks of game, and their liability to be overgrown by the more vigorous natives. Few, or none of those named, however, do rabbits care for, even when hard pressed; and as they would be growing when the rabbit's natural food was abundant, they would be in no danger. Of all herbaceous plants, Carnations are the most likely to suffer from rabbits, but they never attack them during the summer.—" Field."

Cowper as a Gardener.—In looking over the "Life of Cowper" the other day, I came upon the following, which I have thought might be interesting to your readers:—"Gardening was, of all employments, that in which I succeeded best, though even in this I did not suddenly attain perfection. I began with Lettuces and

Cauliflowers; from them I proceeded to Cucumbers, next to Melons. I then purchased an Orange tree, to which in due time I added three Myrtles. These served me day and night with employment for a whole severe winter. To defend them from the frost in a situation that exposed them to its severity, cost me much ingenuity and much attendance. I continued to give them fire-heat, and have waded, night after night, through the snow, with the bellows under my arm, just before going to bed, to give the latest possible puff to the embers, lest the frost should seize upon them before morning. Very moderate beginnings have sometimes important consequences. From nursing two or three evergreens I became ambitious enough to want a greenhouse, and accordingly built one, which, verse excepted, afforded me amusement for a longer time than any expedient of all the many to which I have fled for refuge from the misery of having nothing to do."

Cypripedium Roezlii.—This, the most robust of Lady's Slippers, is a native of New Grenada, where Roezl found it on the banks of the Dagua River, which, according to this celebrated collector, occupies a valley between two ranges of the Andes. The plant, like its ally C. longifolium, is a continuous bloomer, although not in the ordinary sense; that is, the plants only produce one, or at most two, spikes annually; but the flowers on these open one at a time, each lasting about a month, and then fading just as the next flower above opens. It is not uncommon to see both this plant and C. longifolium in bloom all the year round, during which time the same spike will bear from twelve to eighteen flowers. The glossy, bright green strap-shaped leaves are 2 to 3 ft. in length, the flower-spike being of about equal length. The sepals are of a delicate pink colour, streaked with red, the greenish attenuated petals being margined with bright pink or red, the lip being of a clear greenish-yellow tint.—B.

Achania Malvaviscus.—We advise those who have never seen this to procure it. As a plant for a sitting-room, growing thriftily, needing little care, blooming incessantly, standing dry heat and dust, there are few more satisfactory. We remember (says "Moore's Rural") a specimen of it which fills the whole of a store window in Jackson City not less than 5 ft. wide and 10 ft. high. We had occasion to visit that city once or twice a year for several years; we never saw it out of bloom. Its flowers are a bright red, bearing a general resemblance to those of the single Fuchsia, an inch or more long, tubular, with the petals more twisted or contorted than in most malvaceous plants, and a column twice as long as the corolla. The leaves resemble those of the Sugar Maple, but are softly pubescent. Its growth is so rapid that small plants in the spring will extend over a space 4 ft. in diameter by the autumn, the branches bending to the ground from their own weight and that of their ample foliage. In the conservatory they may be trained so as to cover woodwork as readily as a Vine, and there retained, if so desired, during the entire year; or they may be cut down every spring and planted in the open ground, where, with Abutilons, Pelargoniums, and the double Hollyhocks, they are quite in keeping. This plant is old, but, wherever we have visited, rare. It is raised freely from cuttings or seed.

Flowers in Cemeteries.—A cemetery is most certainly the right place for a profusion of flowers. Of all outdoor monumental decorations these are by far the most beautiful and appropriate. Those who have money to spend upon the last habitation of their friends and relations, and who piously desire to show their love and sorrow by some sort of outward sign, will act more wisely in paying some annual fee to the cemetery gardener to keep churchyard flower-beds trim and pretty, than in laying out a vast amount of money among stonemasons, resulting in ill-executed angels, or trophies of cannon balls and swords and cocked hats, and other such insignia, hinting at the professional career of the deceased. The sums of money spent on these great ponderous symbolical monuments are often very large. But who that has groaned in presence of some hideous specimens of sepulchral bad taste, some terrible combination of cherubs and skeletons, of scythes and hour-glasses, of broken columns and ponderous marble clouds, and who has felt the beauty of one of these flower-begirt graves, will not testify to the superiority of the gardener's work over that of the stonemason? There is, too, a symbolism in the introduction of flowers here which makes them specially fit. These plants have come up from a root which itself was buried in the earth in order that the flower which we admire might bloom. They were put into the ground in the form of seed or bulb with no beauty about them to win our admiration, but they come up in due time arrayed in such splendour of decoration as cannot fail to fill us with admiration first, and then, as we think longer, with hope. They are Grasses of the field whose perishable nature has been made before now to typify the insecurity of human life. Moreover, they suggest, at least, a certain continued supervision, a daily tending and care, which favour the idea that those to whose memory they are sacred are still held in recollection by their friends.—"All the Year Round."

THE KITCHEN GARDEN.

BUNCHING ASPARAGUS FOR MARKET.

Asparagus for city markets must be neatly bunched; in villages we sometimes see it offered for sale loose, but in cities it could hardly be sold in this condition. Bunching is slow work, and difficult to do handsomely without some contrivance to hold the shoots while they are being tied, and to secure uniformity in size. The old buncher (fig. 1) is better than nothing. This consists of a board with four pins 6 in. long, and placed about 4 in. apart each way, to form a square. Two strings, usually of bast matting, are laid down on the board, which may be set on a bench up against the wall, or have a back made of another board tacked on it at right angles. The Asparagus is laid on the buncher between the pins, the tops touching the back or wall, to keep them even. When the bunch is large enough, the strings are tied tightly, and the butt-end of the bunch cut square; one string is near the bottom, and strong; the other, near the top, may be smaller. There are several mechanical bunchers, the best we ("American Agriculturist") have seen being that invented several years ago, by Mr. S. B. Conover, who has since then considerably improved it. The engraving (fig. 2) shows the construction; the Asparagus is placed in between two brass strips, the hinged part of the buncher is brought down by means of the lever, and held in place until the strings are tied. The bunch is usually 4 or 5 in. in diameter and 8 in. long, the size being usually smaller early in the season than later. Not only does care in bunching pay, but so does care at every step. In cutting, do not long expose the Asparagus to the sun for any length of time, or it will curl up. Before bunching, wash in clean water. Do not bruise the tops. Assort carefully into two sizes, and pack the bunches of the firsts and seconds separately. If the tops of any shoots have "broken," or grown too much, do not bunch them; they injure the sale in the market. Keep the bunches always upright; and if to be kept for some hours before packing, place them on wet hay in a cool, dark cellar. Pack upright in crates as high as the bunches. If to be sent to a distant market, set the bunches on wet Grass and see to the ventilation.

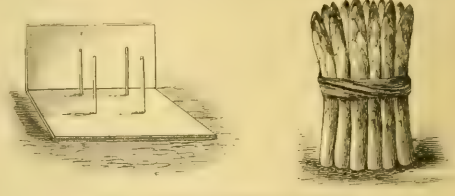

Fig. 1 (Common Asparagus Buncher).

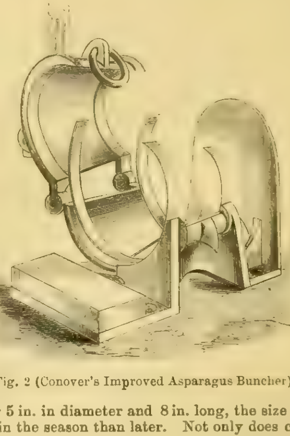

Fig. 2 (Conover's Improved Asparagus Buncher).

Incomparable Celery.—Most cultivators of this Celery will freely endorse Mr. Groom's statements regarding its good qualities. It is found under different names, but the true kind has been held in high esteem for over twenty years. It was grown at a place in the west of England many years ago by the late Mr. W. P. Ayres, who discarded all others in favour of the Incomparable. The difficulty is to get the true kind. I was unsuccessful for a number of years till I secured a packet of seed from Mr. A. Moffat, Hindlip Hall, near Worcester. I have had it in excellent condition late in June, and often found a difficulty in getting it to seed. Mr. Moffat, who lives in a favoured district as regards soil and climate, selects a few plants every year, from which he saves his seed.—M. Temple.

SLOPING BANKS FOR EARLY VEGETABLES.

In most kitchen gardens there is ever a rivalry between early vegetables and the roots of choice fruit trees. The bases of south and west walls are the places first filled with early Peas, Potatoes, French Beans, Cauliflowers, and salads. No doubt the heat reflected from and the shelter afforded by the walls are exceedingly useful in fostering growth; but the vegetables are often grown in such places at the expense of the trees. Partly to avoid this, says the "Country," and also to afford a wider area of sunny sites, raised sloping borders or banks—with a fall to the south is the best—have been introduced in many localities. These may be made of any convenient height or breadth, provided they are large and high enough to prove effective, or be cropped with facility and profit. By altering the slope of the northern or eastern side of such banks we can also shorten and lessen the area of the cold side. That side is, however, about as useful in summer as the warm one, and furnishes the best possible place for the continuous cultivation of Lettuces and other salad plants. The warm, sunny banks are, however, almost equal to the base of a wall for the forwarding of early crops. Carrots, Radishes, Turnips, Peas, early Broad Beans, Potatoes, &c., do exceedingly well on such inclines. Where sheltered places cannot be selected for the formation of these banks, a few thatched hurdles placed at the sides and on the top break the winds, and render the sloping banks more genial than the sides of many walls. Occasionally even a bank of earth may be thrown up on the exposed side. In such cases the wind and cutting draughts are shut out, and the heat of the sun is, as it were, shut in, and its force expended on the fostering of early crops. Such banks are not only useful for early but also for tender crops. In some gardens—which are either too cold or too bleak to mature Tomatoes, Chilies, Ridge Cucumbers, and Vegetable Marrows on the level—such crops may be ripened well on sloping banks. The latter absorb more heat, and reserve it for the plants, reflecting it more thoroughly among them than could be done from a level or even surface. Again, such fruits as Strawberries may be forwarded by at least a fortnight or three weeks when grown on a southern sloping bank. Similar expedients are likewise useful for the cultivation of cordon Pears, Plums, and even choice Apples. These displayed up and down, or, better still, trained across sloping banks, either straight or diagonally, get much benefited by the warmth reflected from the earth, and the crop not only sets, but swells and finishes all the better in consequence. Finally, there is hardly a limit to the usefulness of sloping banks in the kitchen garden: they relieve the cultivator of the necessity of cropping his fruit tree borders, and add much to the area of his warm soil and superior climate for all cultural purposes. Not being preoccupied by any other crop, they are also more completely under the control of the horticulturist, and can be devoted to early or tender vegetables, or early Strawberries, or superior fruit, at pleasure.

CELERY AND CELERY TRENCHES.

Almost every cultivator with whom I converse has a theory of his own, according to which Celery running to seed, or becoming hollow in the stems, is explained. For years, like others, I entertained certain notions on this subject, but I was obliged to relinquish them when I found that plants from the same stock, given to friends, did not run to seed as mine did. I knew that their Celery trenches were not prepared with the same care that I bestowed upon mine, for I proceeded upon the assumption that Celery could not have too much manure. For these last six years, however, I have mixed soil with the manure in equal proportions in my Celery trenches, and the result is, that I have seldom a run stick of Celery or one spongy or hollow. Another evil to be avoided in the formation of Celery trenches, especially in light soils, is making them so deep that the manure or compost rests upon the dry or gravely sub-soil, which naturally absorbs all moisture and substance out of the manure, leaving nothing for the support of the roots. Forming the trenches late in the season is likewise a mistake too often committed; where the soil is light these may be formed in March or even earlier, provided the weather and ground are favourable; trenches made at this season will be found to be exceedingly useful as regards the production of early roots and salads of various kinds, especially in places where the soil is light, but, under any circumstances, the earlier the trenches are formed the better; indeed, for my own part, I consider this to be a matter of more importance than even the description of manure used. The compost in which I find Celery to succeed best consists of well-decayed cow manure and road-scrapings in about equal proportions, with a small addition of soot, the latter being applied just before laying it in the trenches. My impression is that the cause of Celery running to seed and becoming hollow may, in many cases, be attributed to the unskilful and negligent way in which the trenches are made. Celery being an important crop, I shall feel obliged by any practical hints on its growth and culture with which your readers may kindly favour me. J. Thomson.

Leeks in Trenches.—After several years' experience in growing these, I find the following plan to be the best:—I sow the seed in the beginning of March, and about the end of May I plant the seedlings in a bed prepared as for Celery, *i.e.*, a trench from 3 ft. 6 in. to 4 ft. 6 in. in width is thrown out, and 12 or 15 in. of rotten manure is dug into it, leaving 5 or 6 in. of soil on the manure. The Leeks are then planted in rows 15 in. apart, and 6 in. asunder in the rows. They are afterwards treated, as regards earthing-up and watering, the same as Celery. The earthing-up is done with boards at three times, the last being at the end of October, or early in November. It will be at once seen how much easier it is to grow well-blanched Leeks by this plan than by the ordinary one of planting them with a dibble in drills, as is commonly done. They are also more conveniently protected during severe frost.—J. E.

The Cardoon in the Garden.—A correspondent of the "Gardener's Magazine" rightly recommends the Cardoon for the "sub-tropical" garden. If sown where it is to stand early in April, it will make a glorious plant; but the soil must be rich and deep, or the growth will be disappointing. Before sowing, dig into the positions where each plant is to stand rich manure, and in dry weather give a few good soakings of manure-water. The plants must stand at least 5 ft. apart, or they will be too crowded to show their true character. The plant is more telling and graceful than the Artichoke, and the colour of the foliage more glaucous. It will stand well until sharp frost comes. It is best to sow three or four seeds on each spot, and thin out as they advance in growth, finally leaving only the strongest plant.

Quickening the Germination of Seeds.—We have before referred to the experiments made with camphor as a means of hastening the germination of seeds. Some time ago, Goeppert attributed a similar property to chlorine, iodine, and bromine. According to the "Comptes Rendus," these statements have been recently confirmed by the experiments of Heckel. Radish seeds exposed to the action of pure water began to germinate after an average interval of eight days; similar seeds, kept moist with iodine water, germinated in five days; with bromine water, in three; and with chlorine water, in two days. The monobromide of camphor was found to exhibit even greater energy than either of its constituents taken separately, or than a simple mixture of bromine and camphor, germination occurring after a mean interval of thirty-six hours. No explanation of this singular property is suggested. The alkaline borates and silicates were found to retard germination, even in relatively small proportions; stronger solutions checking the process for an indefinite period. Arsenious acid and the soluble arseniates prevented germination altogether by destroying the embryo.

Classification of Soils.—Professor Johnston classifies them according to the clayey or sandy proportions, as follows:—1. Pure clay, from which no sand can be washed; 2. Strong clay or brick clay, which contains from 5 to 20 per cent. of sand; 3. Clay loam, which contains from 20 to 40 per cent. of sand; 4. Loam, which has from 40 to 70 per cent. of sand; 5. Sandy loam, which has from 70 to 90 per cent. of sand; 6. Light sand, which has less than 10 per cent. of clay.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Veitch's Autumn Giant Cauliflower.—With me this has proved much hardier than Snow's Winter White Broccoli. As regards excellence, I know of nothing with which to compare it. I grow it for market, and find it gives the utmost satisfaction.—G. Lee, *Clevedon*.

Sawdust as a Foundation for Gravel Walks.—"X. Y. Z." (see p. 234) gives excellent directions for the formation of walks. It may be worth noticing, that, instead of brushwood as a foundation, sawdust may be used with at least equal advantage. It is sometimes difficult to find a use or place of concealment for sawdust, which is often to be had for nothing, where brushwood might be difficult to get.—Salmoniceps.

Peas and Mice (N. J. V.). When you make a sowing of Peas put some chopped Gorse into the drill at the same time, or rub the Peas in red lead.

QUALITY OF PEARS.

My experience regarding the uncertain quality of Pears exactly coincides with that of Mr. Gilbert (see p. 236). The excessive amount of rain which fell during the past season has evidently had the effect of deteriorating the quality of hardy fruits in general, but more particularly late sorts, which, under ordinary conditions, are so much improved under the bright influences of autumn sunshine. During last September and October there was scarcely sufficient sunshine to promote maturation; hence many of our best varieties of Pears have been barely tolerable as regards flavour, altogether lacking that rich lusciousness so much prized in a good Pear, and only obtainable in fruits perfectly ripened. As a rule the early sorts of Pears have this season been of good size, and clear and beautiful in appearance, but uncertain as regards quality, many well known and highly esteemed varieties generally good being but very indifferent this season. Among these may be mentioned Williams' Bon Chrétien, Beurré d'Amanlis, and Flemish Beauty, the last unfit for table, although fine in appearance, and gathered at various times. To these may be added Autumn Bergamot, Beurré de Capiaumont, Brown Beurré, Marie Louise d'Uccle, Suffolk Thorn, Urbaniste, Beurré Bosc, Durandeau, and even Marie Louise—the last good as regards size, but inferior in quality. The same holds good with respect to the majority of early sorts, the best flavoured being British Queen, Beurré Superfin, Beurré Bachelier, Beurré Hardy, Louise Bonne of Jersey, Seckle, Doyenné du Comice, Thompson's, Passe Colmar, Huyshe's Prince of Wales, and Winter Nelis. Those famous and constantly good Pears—Colmar, Chaumontel, Beurré d'Aremberg, Glou Morceau, Ne Plus Meuris, Bergamotte d'Esperen, Josephine de Malines, Easter Beurré, and Beurré Rance are not only inferior in quality, but poor in size. Beurré Rance was delicious here last season, in fact, superior to what it had been for the previous eight years; this season it is perfectly worthless, as well as Bergamotte d'Esperen, a kind which seldom disappoints. Geo. Westland.

Dwarf Apple Stocks.—In speaking of these (see p. 203), possibly I was not sufficiently clear. My intention was to point out the unsuitability of these dwarfing stocks for planting on light soils, and also their liability sometimes to fail, even where the soil was apparently of a nature well suited to Apple culture. I can assure "W. T." that I had no intention of representing the French Paradise and the Doucin as identical, as anyone who has had any experience with Apples on these stocks cannot fail to know. The Chiswick trial, if it did nothing else, cleared up that question. "W. T." says he has not observed that anyone has recommended the indiscriminate planting of Apples on these stocks in all soils; but if such has not been done, that which amounts to the same thing has, by those who, in speaking of their merits, have not at the same time pointed out their demerits. I am acquainted with several amateurs who, from what they have read of these dwarf Apples, have been induced to plant them in soils wholly unfitted for them—one especially, who has recently planted 150 of them in a new garden, on light dry soil, where they will not last half-a-dozen years, whereas if trees upon Crab stocks had been planted, the reverse would have been the result. The greatest infliction upon the thousands of amateurs who at the present day take to gardening, is that many who treat on gardening subjects indiscriminately extol, under all conditions of soil and climate, anything they may happen to recommend, in cases innumerable inducing those who know no better to plant largely things that end in nothing but disappointment.—T. Baines.

Antigonon leptopus and Paullinia thalictrifolia.—Can you kindly give me any suggestions as to the culture of these plants?—F.E.T. —[Antigonon leptopus is a South American climber, and does best in a warm humid stove where the temperature does not fall below 60°. Its thick root-stocks should be potted in a fresh open well-drained compost, consisting of turfy loam, leaf-mould, and coarse sand. The Paullinia likes a fresh peaty compost best, and succeeds perfectly in a well-drained pan with a copious supply of moisture at the root when making its growth. When well managed, this is one of the most elegant of stove plants. Heat, moisture, and a fresh open compost are the principal essentials in the culture of these as in that of most other stove plants.]

Flowers in the House.—A sitting-room without a blossom in it in the summer-time is apt to have a desert aspect, for wherever flowers are seen in one, there is always as much sense of companionship as if the little flower-people themselves came visibly with the flowers to inhabit the house. And perhaps in a way they do. For the delicate spirits of grace, of gentleness, of taste, and beauty are seen where a dish of flowers fills a table, where a trailer adorns a bracket, or where a Rose blossoms in a vase. We know when we see these attempts at simple decoration, be they ever so slight, that there is some one in the house to whom colour and contour and fragrance appeal; some one who loves Nature as much as upholstery, some one who makes an effort after the ideal, the love of flowers seeming so often to accompany the finer traits, the sweetness and quiet and pleasant habits that make a home as happy as the flowers make it beautiful. That they do make home beautiful no one will dispute, and a choice between a room furnished in the simplest way, with plenty of fresh flowers and creepers about it, and a room gorgeous with gilding and velvet and without a blossom, is, for the most of us, something like a choice between a house of light and one of lonely dreariness.

Measurements of an Acre, &c.—The following will be found useful in arriving at accuracy in estimating the amount of land in different pieces of ground under cultivation:—5 yards wide by 968 yards long contain one acre; as do also the following measurements:—10 yards wide by 484 yards long; 20 yards wide by 242 yards long; 40 yards wide by 121 yards long; 80 yards wide by 60½ yards long; 70 yards wide by 69½ yards long; 60 ft. wide by 726 ft. long; 110 ft. wide by 369 ft. long; 120 ft. wide by 363 ft. long; 220 ft. wide by 198 ft. long; 240 ft. wide by 181½ ft. long; and 440 ft. wide by 99 ft. long. A box 24 in. by 16 in., 22 in. deep, contains one barrel; a box 16 in. by 16½ in., 8 in. deep, contains one bushel; a box 8½ in. by 8½ in., 8 in. deep, contains one peck; a box 4 in. by 4 in., 4½ in. deep, contains a half-peck.

Celastrus scandens.—This native climber, better known, perhaps, by its popular name, Stafftree, presents a grand appearance long after frost has robbed our fields of their summer beauty. It blossoms early in June, and its greenish-coloured flowers are produced in clusters along the sides of the branches. The leaves are of a rich green colour, oblong in shape, and slightly serrated. The berries are roundish or three-cornered in form. When frost appears, the outer covering of the berry opens, showing the shining scarlet pulp surrounding the seed. Here this climber has taken possession of some dead Cedar trees, and at this late season their branches are wreathed in beauty by the long lines of scarlet woven round them. The berries retain their colour, and do not fall for many weeks. This climber is worthy of cultivation, and might be used with good effect in many positions in gardens, cemeteries, &c. It is easily propagated from seeds, cuttings, or suckers.—"Gardeners' Monthly." [Will any reader kindly state if I can obtain this plant in England or where?—R.]

The late M. Andre Leroy.—This distinguished nurseryman and pomologist, who had the largest establishment in Europe, commenced with a very moderate business. His father began in 1780, with only 2½ acres. The son travelled through Europe, collecting information, and plants and fruits. He rapidly enlarged his grounds, and in 1847, he had raised much more than he could sell. This led to the establishment of his agency at New York, which has continued to the present time. He sent 300,000 or 400,000 trees there annually. He occupied 480 acres, and employed about 300 men. His catalogues were published in five languages.

NOTES AND QUESTIONS—VARIOUS.

The Snowy Mespilus or Bird Cherry.—This, when in full flower, forcibly suggests the idea of a pyramid of snow, so abundantly are its blossoms produced. It forms an excellent background to mixed shrubbery borders, and succeeds well in almost any soil. Its foliage being of a pleasing and delicate shade of green, contrasts favourably with evergreens of a darker hue.—J. G.

The White-berried Pyracantha Hardiest.—The Pyracantha with a red berry, Mr. Meeham states, is of no use north of the Potomac. A variety with a white berry is much hardier and a closer grower. It has stood as low as 20° below zero at Philadelphia. A Burlington (Iowa) correspondent, states that the white-berried variety there stood 22° below zero, with strong winds and not snow on the ground.

The Weeping Elm.—Than this few deciduous trees look better on Grass in the form of a single specimen. Its gracefully drooping branches, and its totally distinct character, both as regards wood and foliage, from that of the erect kinds of Elm, render it well worth attention, and at this season when its stout side branchlets are covered with flower-buds just ready to expand, it contrasts strikingly with its evergreen associates, of which there is usually a preponderance in pleasure grounds.—J. G.

Bryophyllum calycinum.—Can you inform me as to the habits and proper treatment of this plant? I have a specimen of it that has lost its leaves, and appears to be dying, although it has been kept in a greenhouse.—Ena. [The Bryophyllum in question is, according to our experience, a plant which it is almost impossible to kill; indeed, its vitality is so great that even the fleshy leaves which fall off occasionally push forth little plantlets from their serratures; and in this way the plant is best propagated. We have always found it to do well, even in a sitting-room window, and, in fact, anywhere, provided it is not exposed to frost.—Ed.]

Tree Planting.—Over 197,000 trees were planted in Minnesota during the tree planting season of 1875, by contestants for certain premiums which had been offered to those planting the largest number.

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> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

DIFFERENT MODES OF GROWING TOMATOES.

Tomatoes, when grown and fruited out-of-doors, should be sown in March, either in 6-in. pots or shallow pans, and placed in heat. As soon as the young plants are ready to handle they should be transplanted, one or two into 3-in. pots, in good rich compost. When the roots reach the sides of the pots they will again require shifting into 6-in. pots, and in these they will make strong plants, which, if properly hardened off, will be in good condition for finally planting out at the latter end of May. If it is intended to grow them against a wall, they should have one with a south aspect; they like good rich light soil, and should be well watered in dry weather throughout the summer. If there should be any trace of green fly on the plants before they are put into their final quarters, give them a good fumigating, or syringe them with weak tobacco-water, turning the plants on their sides in order to prevent the liquid from running down to their roots. Two or three shoots from each plant should be trained to the wall at about 1 ft. from each other. When in full growth they will require particular attention as regards thinning the shoots and nailing them to the wall, and where there is space they may be made to look very ornamental. The chief point in connection with Tomato culture is to pinch off the heads continually at the joint above the fruit, for, if allowed to produce two or more eyes before the point of the shoot is pinched off, their fertility is impaired. If there be not space to spare against a wall for a few plants, they will ripen and colour their fruit well if planted in a single row on the wall border in front of the fruit trees, but about 4 or 5 ft. from them. The border should have a south or west aspect, and the plants should be trained to stakes 4 or 5 ft. high. As soon as they have reached the top of the stakes, they should be stopped and kept pinched in. If the young fruit set too thickly, it should be properly thinned out, and a portion of the foliage should be removed where it shades the fruit. The Orangefield is a variety which should be largely grown, especially by those who have only small gardens. In favoured situations in the sunny south Tomatoes may be planted in the same way as we would Cauliflowers, and at about the same distances apart. They mus tbe trained to stout stakes, and if planted in a deep, rich, and rather heavy soil they will produce fruit nearly from the ground to the top of the plant. Experience teaches us, however, that we must not always depend on a crop of fruit from plants in the open air. There are exceptional cases in favourable localities in which the Tomato will grow and produce fruit abundantly, but, on the north side of the Trent this kind of crop in many gardens may be considered a precarious one. All, therefore, who have the opportunity should grow plants during the summer season after the bedding-plants are turned out, under glass. I have for several years grown a quantity of plants in 10-in. pots in a span-roof pit, without any artificial heat, and from these we have gathered sufficient fruit to supply the requirements of a large establishment. One summer I plunged half-a-dozen Seakale tubs in six lights of a pit that had been filled with bedding plants up to the end of May. These tubs were about 18 in. in diameter and 15 in. deep, and in each tub were planted three or four plants, the branches of which were trained over the trellis that had been occupied by the bedding plants. From these were gathered a large quantity of fruit, and the crop no doubt would have been doubled had the plants been properly stopped at the right time. Any vacant space under glass may therefore be utilised in this way. The back wall of a Vinery, Peach-house, orchard-house, or the ends of a greenhouse, would afford ample space for the growth of Tomatoes. If grown in a Vinery or Peach-house they should not be planted in the border to rob the trees of their food, but should be grown in pots 10 or 12 in. in diameter, or in square boxes, and well watered with liquid manure. As regards the summer treatment of Tomatoes, supposing them to be grown in cold pits or in frames (which offer the best way of securing a crop of fruit in cold districts), they will require carefully tying to upright stakes. As soon as they have formed their first trusses of bloom, the points should be pinched back to two eyes beyond the last truss, an operation which must be repeated from time to time as the plants progress in growth. Air must be admitted on all favourable occasions throughout all stages of their growth, but particularly when the flowers begin to expand and the fruit to swell. The subsequent management is merely a repetition of that already given, viz., supplying abundance of air, keeping them clear of superfluous growths, trimming off leaves that interfere with and shade the fruit, but at the same times preserving as many on the plant as possible, tying out laterals as they advance, and giving the plants a syringing with pure water after a day's hot sunshine. Under treatment of this kind any one may have a good supply of Tomatoes from the end of July to nearly Christmas. Any fruits unripe when the frames or pits are required for other purposes may be cut off, with a portion of the shoot attached to them, and hung up in a greenhouse or any other warm room to ripen. Of varieties I have sown this season Orangefield Dwarf, Hathaway's Excelsior, and The Trophy; the Orangefield is the best for pot culture which I have yet grown, being dwarf and very prolific; it comes into use early, and a single plant will produce a good crop of fruit. Excelsior is one of the best Tomatoes in cultivation, and comes into use early; it is not corrugated, like so many of the old sorts, but is, on the contrary, beautiful in outline, and a first-class kind for purposes of exhibition. The Trophy is a large, coarse-growing sort, with the habit and appearance of the old common red. If I only wanted one variety, I would grow the Orangefield, and if I needed a second kind I would select Hathaway's Excelsior. R.

CELOSIAS AND SALVIA SPLENDENS INTERMIXED.

For conservatory decoration in autumn few plants can equal the different kinds of Celosia. Their fine pyramidal forms, feathered plumes varying from the richest crimson to the brightest yellow, and handsome foliage, render them strikingly beautiful in autumn, when most of the summer subjects have ceased blooming, and before those that flower in winter are in. They associate well with Salvia splendens, and have a grand appearance, especially when judiciously intermixed with it. Salvias should be propagated in March, and when struck be potted off into 60-sized pots and placed in a pit, in which there is a gentle bottom-heat, near the glass. Keep them rather close for a day or two till such time as they get hold of the soil, when air may be admitted freely during fine weather; pinch all the strong shoots, in order to make them bushy, up to June, but after that they should be allowed to assume their natural form of growth. When they have fairly filled their pots with roots, but not pot-bound, shift them into 32-sized pots, using a compost of good fibrous loam and a little rotten cow-manure. In May they may be gradually hardened off before their final shift into 12-sized pots, or perhaps, what is better and less troublesome, plant them out in a well-prepared sheltered border and liberally supply them with water during dry weather. Here they may remain until the nights begin to get cold, when they must be lifted and potted; keep them cool and shaded and well watered at the roots, sprinkling overhead twice a day for a few days, and they will soon recover, and ought to be got into some light airy house to bring them on ready for the conservatory when wanted. The Celosias should be sown in April, in a well-drained pan filled with fine light soil, covering the seeds very slightly. Place the pan in heat, and in a few days they will be up, and when large enough to handle, should be potted off into small 60-sized pots, placing them in a pit in which there is a good bottom-heat near the glass. Keep the pit rather close and shaded for a few hours if the weather be bright until they have become established, when shading should be discontinued and more air given. They must be kept growing freely or they will not get large enough to match the Salvias; if shifted, however, into 32-sized pots as soon as the roots begin to work round the pots, and kept plunged n bottom-heat, there will be no danger of them not growing to the required size. Use a compost consisting of two parts loam, two rotten cow-manure, one leaf-mould, and one sand, all well mixed together. If all go well, in about three weeks from the time when they were shifted into 32-sized pots, they will require their last shift into 12-in. pots, and if they can still have a little bottom-heat, so much the better, but they should have plenty of top air to keep them bushy. When they get hold of the fresh soil, they may be removed to a light, cool pit, and kept well supplied with water. Here they may remain until their associates, the Salvias, are ready, when they all may be removed to the conservatory. Some Celosia seed sown in July, and its produce grown on, furnishes very pretty and useful decorative plants for the winter if kept in a moderately warm house. W. E. H.

RAISING CROCUSES FROM SEED.

All the best varieties of Crocus bear seed freely, except the yellow or orange-coloured ones. In the month of June the seed-vessels may be seen just peeping out of the ground in the centre of the Grass, which about the same time begins to turn yellow, and soon after decays. Every flower produces a seed-vessel, which is white, consequently easily seen. They should be gathered, for if left they will burst and scatter the seeds all over the bed, and will be found troublesome to pick up afterwards. A bed should be prepared by mixing manure well with the soil. The seeds must be sown in the autumn (never in the spring) soon after they are gathered, in drills about 8 in. apart and 1 in. deep; they will commence to grow about September, and the plants will make their appearance aboveground in the spring, about the same time as the older corms begin to grow. The first season only two blades of Grass will appear, the second year more blades, and the third year flowers will be produced. A gentle top-dressing should be applied to the seedlings every winter. About July, after the Grass has decayed, the corms may be taken up, and in September or October planted in the flower garden. On no account must the Grass be cut down until it is decayed, or the corms will fail to perfect their growth, and cause them to produce very poor, small flowers. Hundreds of Crocuses are destroyed every year through carelessness while digging manure into the beds, as the bulbs frequently are buried so deeply that it is impossible for them ever to pierce through the soil. It is a good plan to plant Crocuses in clumps at every corner of the beds so that their position can be easily identified. Always have a good reserve of seedling Crocuses in stock; they are always useful, always beautiful. All the choice and varied coloured Crocuses—white, lilac, blue, and striped—reproduce themselves from seed, the yellow ones do not; they are increased by numerous small corms formed underground, which flower when grown to the usual size. The other varieties can be increased in the same way, but the process is slow compared with what can be obtained from seed sowing. Crocuses form new corms every year, which rise upwards; they should be taken up about once in three years and re-planted about 3 in. deep, otherwise in a short time they would grow quite to the top of the soil, having altogether an opposite habit to the Tulip, the new bulbs of which, formed every year, grow downwards. I have seen Tulips which had penetrated the soil upwards of 18 in.

Fencote. H. Taylor.

Experiments with Seeds.—Dr. Sargot, of the Botanical Society of France, has lately made some interesting observations on the germination of seeds which have not attained their complete maturity, but the embryo of which has already been formed. To measure the degree of non-maturity, he simply estimated the weight of the unripe seeds which he sowed in fractions of the weight of ripe seeds of the same species. Then he sowed, in good condition as regards soil, temperature, and moisture, seeds weighing one-half, one-third, one-fifth, &c. of what they would weigh at complete maturity. In general he has found that the least ripe seeds are those which germinate the most slowly. The young plants resulting from them remain for a long time stunted; but they ultimately attain their normal vigour. There is not a minimum weight below which a seed ceases to germinate, and which is general for all the species. Thus the Polygonum orientale, according to Dr. Sargot, cannot germinate at one-fourth of its normal weight, while Pisum sativum still germinates at one-tenth and one-twelfth of its weight. Lastly, he has succeeded in causing to germinate seeds of wheat gathered in July, still green, and with milky perisperms, thus confirming, in a remarkable manner, previous observations made by M. Duval-Jouve and others.

NOTES OF THE WEEK.

—— Some parts of the College Botanic Garden at Dublin are now quite gorgeous with the flowers of that noble Daffodil, Narcissus maximus, which attains a height of nearly 2 ft., and is, when grown in rich soil, so large that it more resembles a tropical than a hardy northern flower.

—— Xanthoceras sorbifolia was exhibited in beautiful condition by Messrs. Veitch & Sons (on behalf of Messrs. Thibaut and Keteleer, of Sceaux, near Paris), at the Royal Horticultural Society's meeting on Wednesday last. It is stated to be perfectly hardy, and promises to be a valuable addition to early flowering shrubs. The specimen shown had been lifted from the open ground, and forced in heat. It will be remembered that a coloured plate and description of this new hardy shrub was given in our last Volume (see p. 524).

—— The Hon. and Rev. J. T. Boscawen has brought us fresh blooms of Narcissus heminalis of Haworth, one of the most distinct of all the early-flowering Narcissi, having showy golden slightly odorous flowers and bright green sub-cylindrical leaves 18 in. in length. Mr. Boscawen informs us that the plant came from an old country garden, where it had grown undisturbed for years.

—— A very singular and fine effect may now be seen in the Phœnix Park, Dublin, where a bold group of tall specimens of Dracæna indivisa is in vigorous health in an open position. The effect, too, is all the more striking from the fact that these evergreen and tropical-looking children of the South are contrasted with numerous groves of bare trees in the great wide park, well swept by mountain breezes.

—— Mr. William Falconer, once of the staff of The Garden, has been appointed superintendent of the Botanic Gardens, Cambridge, Massachusetts. Mr. Falconer's training and habits of observation fit him well for the important post which he has been selected to fill. The introduction of the many fine hardy plants, natives of North America, but yet unknown to gardens, will, we hope, receive a fair share of attention in the Cambridge Garden, where the opportunities of getting new species are so favourable.

—— The large-leaved Saxifrage (S. crassifolia), which now adorns so many gardens, is greatly improved if grown in sheltered spots among shrubs, &c. In the College Garden at Dublin there is now a sheet of it sheltered by some of the fine Hollies for which that garden is so remarkable, and the flowers are more beautiful and fresh than those on exposed tufts.

—— The Phylloxera Commission has reported that none of the specifics submitted to them is entitled to the prize of 300,000f. voted by the Assembly. They state that by applying insecticides to the stock and roots between the 1st of February and the 1st of April the Vines may be protected from the disease, and they recommend the formation of committees in each Department to furnish advice and assistance to the vine-growers. The Minister of Agriculture has accordingly addressed a circular to the Prefects, directing them to confer with the agricultural societies in order to carry out this recommendation.

—— Among new and rare Orchids shown at South Kensington on Wednesday last were Ornithidium coccineum, from Lord Londesborough's collection, a kind which bears coral or scarlet flowers and buds among fresh green Odontoglossum-like pseudo-bulbs and foliage. The rare and beautiful Phalænopsis Portei is also blooming in the same collection; it has snowy sepals and petals, and a carmine or lilac-purple three-lobed lip. P. Veitchii, exhibited by Messrs. Veitch and Sons, has flowers similar in shape to those of P. Portei, but the sepals and petals are suffused with rosy-lilac. The milk-white Dendrobium Heyneanum came from Sir Trevor Lawrence's collection, and a splendid large-flowered variety of Consul Schiller's Phalænopsis was furnished by Sir H. Peek, as was also a very fine plant of the trumpet-lipped Dendrobe (D. lituiflorum) bearing forty-three richly-coloured flowers.

—— Messrs. Hooper, of Covent Garden, showed this week at South Kensington Alpha Potatoes raised this season. They were planted on the 13th of January, and were lifted on the 7th of March, good tubers, excellent in quality. Alpha, being a very dwarf-growing variety, seems peculiarly suitable for frame culture. They were grown by Mr. Barker, of Littlehampton.

—— The fabrication of flower-pots from a mixture of cow-manure and earth is now extensively practised in North Germany. As many as 16,000 were used in one establishment. For forcing they are recommended; they are well adapted for nursery work, for plants raised in pots, and afterwards turned out pot and all. The roots of plants penetrate the sides of the pot, and extract some nourishment from them. They are easily and rapidly made by simple machinery.

THE FLOWER GARDEN.

DWARF CANADIAN CORNEL.

(CORNUS CANADENSIS.)

THIS is a very pretty but neglected miniature shrub, of which each little shoot is tipped with white bracts, pointed with a tint of rose. When well established it is a very ornamental plant, and it is not at all fastidious, but, being very dwarf, rarely is suited with a proper situation. It is lost among coarse herbaceous plants, and totally obscured by ordinary shrubs, ; it should, therefore, be planted among Alpine plants on a rock-work, or round or near the edge of a bed of very dwarf Heaths or American plants. It grows about the size of the Partridge Berry, or somewhat larger. Wherever placed, rather damp sandy soil will be found to suit it best. It is a native of North America, in damp cold woods. Growers of British plants may like to possess Cornus suecica, but I have never seen it well grown under cultivation, nor is it so ornamental as the preceding.

Cornus canadensis.

V.

THE TURFING DAISY.

THIS (in botanical speech Pyrethrum Tchihatchewii) is a native of Asia Minor, and one of the ten thousand dwarf plants of the Daisy or Composite Order with which the northern world is inhabited. It is a dwarf hardy evergreen herb, which I first saw in the Paris Garden some years ago; and it was there used with good effect for covering dry sandy banks, and no doubt it is among the best dwarf plants which may be used for that purpose. The leaves are finely divided and of a rich dark green. The plant is in cultivation in various nurseries, and is of very easy culture. The flowers are white.

Turfing Daisy

R.

SPRING PRUNING STANDARD ROSES.

DURING March or, at the latest, early in April, standard Roses must be thoroughly pruned as follows:—Cut clean out all the dead and small twiggy wood, then shorten the shoots of stout wood to about four eyes, always leaving the top eye in a position pointing outwards. Keep the tree as near as possible in the form of half a ball, and rub off any shoots which grow inwards and cross each other. On going over the trees just before the flower-buds expand it will be found that the top bud on each branch will be more forward than the one below it. If you intend to exhibit, and your blooms are too early, with six or eight shoots left on the tree, two or three of these top shoots may be cut back to the shoot below in order that the second bud now left may bloom stronger about a week later. Roses, it must be remembered, are very thirsty, and from the end of May the trees must be constantly watered. Even on lawns, where the Grass does much to preserve a moist bottom, it is best to plant them in small sunk circular beds to facilitate the conveyance of water to their roots. To obtain fine blooms their roots must never be dry during the summer, and liquid manure, weak at first, gradually increasing in strength, should be given once a week so long as they are in a growing state, but the supply should be stopped in the autumn to enable them to rest. The drainage of cow-houses, stables, or piggeries, diluted with soft water, forms an excellent fertilizer; if such cannot be obtained, throw about three spadefuls of manure into an 18-gallon cask; fill up with water, and let it stand a day or two to settle; as it becomes reduced, fill up again with water. After the second dose, change the manure, adding water as before. Destroy grubs and green fly as soon as they make their appearance; green fly increases rapidly if the early broods be not annihilated. The trees must be kept cool at the roots, and for this purpose nothing is better than a mulch which retains the moisture well. If the trees be kept in a healthy growing state, they are rarely attacked by green fly or other insects to any alarming extent. To have twenty-four blooms ready on a given day is no easy task in the case of a small collection. The only way to attain this object is to watch vigilantly the progress of the trees, and regulate the time of blooming, by cutting out the top blooms when too early, and trusting to those from the shoots below. Some varieties produce their blooms in clusters; where this is the case, the usual thinning out of buds must be resorted to in good time, but generally it will be found that the best of the exhibition Roses have a habit of producing only one large flower upon each shoot. In the months of May and June, before Roses come into bloom, watering overhead from a garden engine will do much good, and be as effective as at the roots. Play the engine vigorously against the foliage on a summer's evening, and much trouble in hunting for insects will be saved, as they have a wholesome dread of a thorough washing. Suckers must be watched for and grubbed up. Let the shoots be pruned back a little as the trees go out of bloom, it will greatly assist them in throwing out fresh flowers in the autumn. HENRY TAYLOR.

Fencote.

NARCISSUS MONOPHYLLUS.

PERHAPS your readers may be glad to have a few more particulars concerning this Daffodil, which you have so well illustrated in your last number (see p. 239), and which I call Corbularia cantabrica. There is, however, one fault which detracts from the merits of the engraving, viz., that the outer sections of the perianth are flexuose instead of being perfectly straight; this may have been caused from the specimen being partially withered. I must add to your description that the flowers are deliciously scented with the odour of the Orange blossom. I sowed seeds of this plant two years ago; they are growing very well, but, of course, are not likely to flower for some years to come. I received last autumn, from Algiers, several bulbs which had been gathered in a dormant state, having ripened in their native habitat. I planted about fifty of them on their arrival; they all grew without exception, both in pots in a cool greenhouse and in the open ground; but only one bulb produced a flower, and that in the greenhouse. A remarkable circumstance connected with this bulb is that my correspondent in Algeria, at the time he sent mine to England, planted a few of the same in a flower pot, and they all, without exception, flowered. The cause of their not flowering in England as well as they do in Algeria must be the want of sunlight, for the temperature in that country in December averages 60° Fahr., an amount of heat which we can easily command in a greenhouse in England. I imagine that this plant has not been found in Spain since the time of Clusius, for Willkomm and Lange, in their Prodromus of the Spanish Flora, do not appear to have seen it either alive or as a dried specimen. Its flowering season in Algeria is from December to March, according to the locality, for it has a very wide range—from the sea-coast at Oran to the borders of the desert. Sometimes, but very rarely, two flowers are produced on the same scape. We have much to learn in the art of bulb-growing. I have bulbs at present from Algeria planted in my garden in 1873, which have lain dormant until the present season, and are now showing leaves for the first time. Others planted at the same time flowered the first year, and then, after refusing to show themselves for a whole year, grew luxuriantly. Mr. Barr is not the only person who has flowered this Corbularia, as, in addition to the one flowered at Kew in 1870, Mr. Berkeley informs me that he flowered it last year at Sibthorpe, near Market Harborough. The best figure of this

Narcissus is in the "Exploration Scientifique de l'Algérie," pl. 476, 2. Duval has also a good figure of it in the "Petit Bouquet des Plantes de la Méditerranée" under the name of Narcissus Clusii.

The Holt, Farnham. G. Munby.

GARDEN VEGETATION IN FEBRUARY.*

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

February has been rather wintry; snow lay on the ground from the 7th until the 16th, and again from the 25th until the 27th. The thermometer during the month was nineteen times at or below the freezing point, indicating collectively 113°, the lowest markings being on the mornings of the 6th, 7th, 10th, 11th, 13th, and 14th, when 24°, 26°, 19°, 19°, 18°, and 18°, were indicated respectively; the highest morning temperatures occurred on the 17th, 18th, 19th, 23rd, 28th, and 29th, when 38°, 37°, 38°, 39°, 37°, and 38° were indicated. The six highest morning temperatures during January were 41°, 40°, 40°, 41°, 42°, and 42°. During February, 1875, the thermometer was twenty-one times at or below the freezing point, indicating collectively 75°. The following Table shows the amount of frost that occurred during the months of February for the last thirteen years:

1864	165°	1868	10°	1871	16°	1874	69°
1865	98°	1869	6	1872	13°	1875	75°
1866	38°	1870	74	1873	123°	1876	113
1867	12°						

The snow and frost experienced during the month of February this year has considerably retarded vegetation, which is, however, still somewhat early owing to the mildness of January. The following is a list of spring plants, the dates of flowering of which are annually reported:

	1876.	1875.
Rhododendron Nobleanum	February 10	March 13
Dondia Epipactis	„ 11	February 5
Bulbocodium vernum	„ 16	„ 6
Scilla præcox	„ 16	January 23
Nordmannia cordifolia	„ 16	March 11
Aubrietia grandiflora	„ 17	February 15
Sisyrinchium grandiflorum album	„ 17	March 6
„ „ „	„ 20	„ 8
Scilla sibirica	„ 20	„ 10
Iberis gibraltarica	„ 21	February 2
Draba aizoides	„ 21	March 8
Orobus vernus	„ 23	„ 28
Scilla bifolia vera	„ 24	„ 7

In the rock garden forty-eight species were counted in bloom on the 29th of February, the most conspicuous among them being the different varieties of Hepatica, Helleborus colchicus, H. purpurascens, H. purpurascens minor, Dondia Epipactis, Crocus Imperati, Galanthus nivalis and G. plicatus, Leucojum vernum, Bulbocodium vernum, Rhododendron præcox, Daphne Mezereum, Saxifraga cordifolia ovata, S. oppositifolia, Primula denticulata and P. purpurea, Iberis gibraltarica, and Corydalis angustifolia. There may also now be seen in bloom in the rock garden Veronica rupestris and Lithospermum fruticosum, one or other of the plants of the former species having been in flower more or less since January, 1875, and the latter since April in that year. On the Grass slopes Snowdrops, Crocus susianus, and Scilla bifolia are now flowering in abundance. Owing to snow and frost and the general backwardness of the month Snowdrops were not seen in perfection until the 27th. The spring Crocus and its varieties, although flowering more or less from the 28th of January, did not produce a full display of bloom till the end of the month. Most of the shrubby plants mentioned in my last report as being far advanced in consequence of the mildness of the weather in January, have not suffered in any way, but they have progressed but little since that time. The common Stonecrop is now perfectly yellow, although on the 31st of January the golden colour was only visible on a few pieces hanging down some stones facing the sun. No perceptible change has taken place as regards the swelling of the buds of forest and ornamental trees during the month, although several were recorded as being in a forward condition.

Rheum palmatum as a fine-foliaged Plant.—This plant is now very seldom seen, though in these days, when hardy plants with fine foliage are so much sought for, it would be useful to many who would take little interest in it from any other cause. In old days I used to consider it the source of medicinal Rhubarb, but heard that idea was erroneous. Now, however, the Russian botanists have proved that the Chinese Rhubarb, which comes to Europe through Siberia, is yielded by Rheum palmatum; so that this, after all, is one of the genuine Rhubarb plants.—W. T.

A Show of Flower Beds.—An Exhibition of Flower Beds will form part of the arrangements of the Royal Botanic Society for the forthcoming season. The Duke of Teck, president of the Society, will open the new wing of the conservatory on Thursday, June 1, and on the same day an exhibition will take place of flower beds and borders. The beds will be laid out on the lawn and are to be formed with living plants in pots plunged in sand, and to be of a size sufficient for the design to be carried out in the same manner as when the plants are bedded out in the usual way.

Roses from Cuttings.—I am greatly interested in raising Roses from cuttings, and shall be glad if any of the readers of The Garden will give me advice on the subject. I have no glass.—V. [This subject has been frequently treated of in The Garden. Roses may be readily struck in the open ground, and, in fully exposed positions, if cuttings are put in in autumn; they may be put in either in summer or autumn; in summer is the quickest mode, and the cuttings will then require shading for a time. The autumn cuttings thrive best with shading and abundance of water when beginning to push early in spring.—W. S.]

Preserving Flowers without Destroying their Colours.—A French gentleman, M. Boulade, has discovered that if freshly-gathered plants be spread out between sheets of filtering-paper in the usual herbarium manner, and then heated between two bricks in an oven for two or three hours at about 150° Fahrenheit, they will be perfectly and permanently preserved without impairment of the most delicate colours. The process is rendered more rapid and certain if the layer of filtering paper next the flowers be changed after about an hour. If this process be found as effective as above described, it will prove a valuable one, not merely in preserving the colours, but in shortening the ordinary tedious process of drying plants.—R.

Daisies of Corsica.—Corsica furnishes three sorts of Daisies, all of which may be met with in flower in the winter. They consist of Bellis annua, B. perennis, and B. sylvestris. Of these our native type is decidedly the rarest in the Mediterranean island, occurring chiefly in the hill pastures around Pigno, Vico, and Bocognano. The commonest of the three is Bellis sylvestris, the Woodland Daisy, which is scattered with a free hand in the Mâquis bordering on the coast-line throughout the whole island. It is a tall towering Daisy, with long rough leaves that are three-nerved, and a hairy wiry scape that supports the single head of flowers. The marginal florets are rosy-pink on the outside, as in our own species. Decidedly the prettiest of the three is Bellis annua as it opens in the month of January, for as the year advances, it assumes larger and less symmetrical proportions. It is a true lover of the coast-line of the Mediterranean, and I met with many a plant that I might have covered with a florin, that bore one or two flowers with marginal florets of dazzling whiteness. The leaves are light green and crenate, appearing, as in our Daisy, in rosettes.—Peter Inchbald, *The Lodge, Hovingham, York.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

A Happy Marriage.—In rambling by a drive the other day, I came upon an old and stately Scotch Fir, with a long wreath of Honeysuckle growing round its stem to a height of 8 ft. or so. The plant looked vigorous enough, though growing so near the hungry giant, and reminded one of a spaniel couched in a tiger's lap in some zoological garden.—V.

Christmas Roses.—I see allusion made in The Garden to the large Aberdeen Christmas Rose. It is the Helleborus altifolius; but doubts are entertained as to its being distinct from H. niger. I have never got ripe seeds of it. I do not believe it to be H. abchasicus; I imagine the plant called by nurserymen atrorubens is H. abchasicus; but the true H. atrorubens is a very different plant, with the leaves not evergreen.—J. T. B.

Aponogeton distachyon out-of-doors.—"Quo" says (see p. 230) that, according to his experience, "this plant does better in a cold house than in a warm one." It will, I think, generally be found to thrive better in the open air than under glass. Many years ago it used to flower and ripen seed in a pond in the Edinburgh Botanic Garden, and I believe it still continues to do so.—P. Grieve, *Culford Hall.*

Saffron.—This grows in many parts of Greece, but principally in the islands of Naxos, Mycone, Simi, and Tinos. It is collected by poor women and children, and sent in small lots to Smyrna. The Crocus hellenicus, according to a Greek writer in the "Pharmaceutical Journal," is among the best varieties of Saffron.

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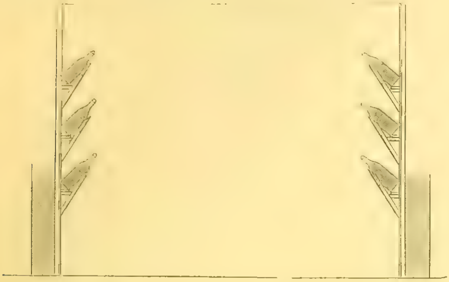
* Read before the Botanical Society of Edinburgh, March 9th, 1876.

THE FRUIT GARDEN.

GRAPES IN BOTTLES OF WATER.

I have recently seen the Grape room at Heckfield, now full of fruit, and a remarkable sight it is. It measures 14 ft. by 10 ft., and 8 ft. from the floor to the ceiling; it is fitted with three tiers of shelves or racks, running in an horizontal line round the sides of the room; space is thus provided for upwards of 200 bottles, which are fixed in a slanting position, and are all filled with Lady Downe's Grapes, of the finest possible quality. On the lowest computation, each bunch would average 2 lbs., a large weight for this variety. The berries are also large in size, black as Sloes, and highly flavoured, the Muscat aroma being very marked. Those who have not yet succeeded in keeping Grapes after this fashion would do well to take a leaf out of Mr. Wildsmith's book, who considers the following the only requisites to keep them successfully. First, a suitable room, which should be dry, with ample means for ventilation and warming when necessary to expel damp. Second, thorough maturation of the fruit before bottling. At Heckfield the Lady Downes are treated to as much or more heat than the Muscat of Alexandria, and the results seem to justify the practice. Third, the lateral shoots above the branch should not be cut off, but left to divert, as in some measure they must, the water from being taken up by the fruit. Lord Eversley, who takes great interest in all that pertains to gardening, has jocularly named this room Mr. Wildsmith's "Temple of Bacchus," we suppose because the Grapes are preserved in old champagne bottles. —Q.



Section of Grape Room at Heckfield. Scale ½ in. to 1 ft.

FORCING STRAWBERRIES.

Our season for gathering this delicious fruit commences the first week in March, for, although they may be procured earlier, I do not find them repay the labour which such hard forcing necessitates, and the flavour is seldom good if ripe earlier, owing to the absence of light. To be successful in forcing Strawberries, especially the earliest crops, so much will depend on the preparation of the plants, that no amount of attention in other matters will compensate for delay in procuring runners, and consequently having the plants but poorly matured; in fact, a good deal of the forcing may be done in the earliest stages of the plant's existence. Procure the earliest runners that can be got; layer them in 3-in. pots, and encourage their growth by thoroughly soaking the parent plants with manure-water, keeping the soil in the pots moist until they are established, when they should be severed from the stools and at once shifted into 6 and 7 in. fruiting pots, using one-year-old stacked turf from a rich pasture, chopped up fine and rammed hard. If any stimulant be needed, weakly-diluted liquid-manure should be added; but for plants intended for early forcing, get a well-ripened crown and a potful of roots as forward as possible, thereby inducing an early season of rest. For the first crop, we prepare a pit filled with a good depth of dry leaves early in November, which gives a mild genial heat to the roots and starts them into active growth before much top-heat is necessary, as even the best plants are easily spoilt by excessive heat in the early stage of forcing. When fairly started into growth, we introduce the most forward plants to shelves close to the glass in early Peach-houses, or vineries where a mild but gently progressive temperature is maintained. With attention to watering as required, the growth will be sturdy, and flower-spikes will push up strongly, especially if a gentle circulation of air be provided during both night and day. A somewhat drier atmosphere is advisable when in flower, with as much air as the temperature of the weather will permit. We always assist the setting of those in bloom before March with a camel-hair brush, for if imperfectly set, the fruit must, of necessity, be deformed. Succession crops, if carefully attended to, never fail to set every bloom that is allowed to remain on; but, as soon as sufficient blooms are expanded for a crop, we clip the rest off, as the strongest blooms always open first and produce the finest fruit. Strawberries are essentially moisture-loving plants, and if once allowed to get dry enough to droop their foliage, may be considered as permanently injured. Liquid-manure is highly beneficial when the fruit is swelling, but should be perfectly clear, or the soil becomes sodden and sour; give a little at every watering rather than over-strong at any one time. Clear water only should be given when the fruit is ripening, and, if the pots be removed to a cool airy house a few days before the fruit is fit to gather, the flavour is greatly improved. Those not fortunate enough to possess a house specially devoted to Strawberries may provide a very good substitute in a pit heated with hot water; for lofty structures are not necessary, as the plants cannot be too close to the glass. As regards sorts, I have discarded Black Prince for the earliest, and substituted Prince Imperial, of which we have now (March 8) beautifully coloured fruits; for a second early, I find few excel Keene's Seedling in all respects; and, for later kinds, President and British Queen may be relied on everywhere. Some of the newer kinds, like most other kinds of fruits, appear to gain a special notoriety for early forcing in certain localities, which is not fully borne out under all circumstances elsewhere. J. Groom.

WEIGHTS OF FRUIT.

Some may not know, says a writer in the "Tribune," that the finest Apples grow in Nova Scotia, but so it is. The largest Apple shown there last year (Chebucto Beauty) weighed 18½ oz.; the second largest (Cayuga Red-streak), 17 oz. The best dozen shown (Emperor Alexander) weighed 10 lbs. 6 oz. The weights of other kinds were:

	lb.	oz.	Single Apple
Gravenstein, dozen	6	7	... 13
Yellow Bellefleur, dozen	5	14	... 10
Ribston Pippin, dozen	5	10	... 9
Nonpareil, dozen	5	9	... 9
King of Tompkins Co., dozen	7	11	... 12
Blenheim Pippin, dozen	8	8	... 12
Northern Spy, dozen	7	0	... 12
Rhode Island Greening, dozen	6	8	... 12½
Blue Pearmain, dozen	6	9½	... 11
Esopus Spitzenburg, dozen	5	0½	... 7½
Gloria Mundi, dozen	9	12	... 13½
Chebucto Beauty, dozen	9	15	... 18½
Calkin's Pippin, dozen	5	14	... 9
Porters, dozen	4	15	... 6½
Yellow Newtown Pippin, dozen... ...	4	4	... 6
Clyde Beauty, dozen	9	1	... 13
Baldwin, dozen	6	8	... 9½

The largest dozen of Plums (Bradshaw) weighed 27½ oz.

Birds and Fruit.—Last spring a young man in my employment destroyed all the nests of blackbirds and thrushes which he could find before the matter was brought under my notice, and, when I remonstrated with him in reference to what he had done, he stared at me in blank astonishment. He thought he was doing me a service in destroying the eggs and young brood of my enemies at such a season. I know that, in some places, "the taking of nests" in spring is considered to be a more humane practice than killing the birds after they have reached maturity, but, for one, I protest against the destruction of birds' nests. If it be found absolutely needful to destroy birds in the fruit season, let them be killed outright. It is said that only about one in every four of the young birds that are hatched arrive at maturity; but, be that as it may, I protest against the very general idea that prevails, that gardeners are bent upon the wholesale destruction of certain kinds of birds. That many of them sanction their destruction under the plea of necessity is one thing, but the heartless destruction of their nests cannot be justified in any form. I have been told that egg-shells stuck upon the twigs of Gooseberry bushes, or dwarf fruit trees, prevent birds from eating their buds in spring. I have not had an opportunity of testing this, but any of your readers troubled with birds might soon do so.—J. Thomson.

Ripening of Pears.—Several varieties of Pears have this season been eccentric as regards their time of ripening; Easter Beurré, which usually begins to ripen here about the middle or end of January, was this year perfectly ripe by Christmas, but was not of so good quality as usual; Glou Morceau, whose usual time of ripening is about the middle of December, was not ripe this season until after the middle of February; it is now, the first week of March, in excellent condition, and is of first-rate quality. Knight's Monarch, which is usually fit for table by the middle of December, does not this year appear to be likely to become melting at all. These varieties have all been produced by trees trained to a wall having a due east aspect.—P. Grieve, *Culford Hall, Bury St. Edmunds.*

Brazier's Fame Apple.—This excellent culinary variety is fit for use from November to April. It is a conical fruit, very irregular in outline, and one which has large, unequal ribs, that terminate about the eye in large, unequal ridges. Its skin is golden-yellow in the shade, but on the sunny side bright vermilion-striped, and splashed with darker shades of the same colour. Its stalk is generally a mere knob, set in a wide, irregular, deep, and slightly-russeted cavity. The eye is large and nearly closed, placed in a wide, angular, and irregular knobbed and plaited basin. Its flesh is white, crisp, firm, very juicy, and nicely acidulated; altogether it is a beautiful fruit, somewhat resembling in shape and colouring good specimens of the Cornish Gillyflower, but without russet. I received this sort from Writtle, and I believe it to be of Essex origin.—J. Scott, *Merriott, Crewkerne.*

A Continuous-bearing Pear Tree.—"The Grass Valley Union" says: "We have read frequently of late about fruit trees that have borne second crops. Mr. Taylor, who has a fine orchard, has some trees that can beat all second-crop trees. He has a Bartlett (Williams' Bon Chrétien) that ripened a first crop this year, and that first crop has been gathered and eaten. The second crop is now ripe and ready to be gathered; the third crop is almost ripe; the fourth crop of Pears is but little smaller than the third; the fifth is getting along finely, and the sixth and seventh crops show their regular gradations of size in fruit, while the tree is blooming for the eighth crop." [After this our gigantic Mushroom and prodigious Gooseberry may hide their diminished heads. No doubt the fine climate enjoyed by Grass Valley, where we have seen Peach trees growing like young Lombardy Poplars, induced the tree to make repeated growths.]

The D'Arcy Spice Pippin Apple.—In Mr. Scott's account of this Apple (see p. 222) there is a slight mistake respecting Mr. Harris's place of residence. It should have been Broomfield, near Chelmsford, instead of Baddow. In works on pomology this variety is said to have been first introduced to public notice in the autumn of 1848. This may be true as far as the London public is concerned; for Mr. Harris used to grow large quantities of fruit himself, and also buy fruit for the London markets. He, therefore, might have grown it and brought it to London, but he did not raise it from seed; for Mr. Robert Baker told me that his grandfather used to get this Apple from D'Arcy, and Mr. Baker is now about fifty-five years of age. I well recollect him bringing the grafts to the vicarage at Writtle, in 1854; we cut an espalier tree back and he grafted it himself with the D'Arcy Spice. How it got the name of Baddow Pippin I do not know.—Jas. Clarke, *Writtle.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Late Strawberries in Pots.—Years ago when living near London, I used to see market gardeners taking up young Strawberry runners in March to pot for late work, and with what success Covent Garden proves yearly. Acting on the hint, I always plant out good runners in August, take them up and pot them in March, and grow them in cool houses with the very best results. —R. G., *Burghley.*

Pearson's Golden Queen Grape.—I planted a cane of this Grape last autumn, and although it has had no forcing whatever, some of the young shoots are already more than a foot in length, and on every one of them there is a bunch. Alicantes and Lady Downes planted at the same time and in the same house are not yet in leaf.—Vitis.

Amateur Vineries.—A very common error that I have observed is that of delaying the pruning of Vines so late that serious injury is done by bleeding. When, as is often the case, the Vinery has to do duty for plant-house as well, a little fire-heat is put on to guard against frost, and the Vines are excited into growth before the owners are aware of it. The safest plan in all such cases is to prune as early after the fall of the leaf and removal of crop as possible.—J. Groom.

A RIVIERA GARDEN IN FEBRUARY.

The flora of the gardens of Nice and the Riviera generally is so cosmopolitan in character as to defy the efforts of anyone who has not good botanical works at hand to describe it accurately, and from the attendants themselves scarcely any reliable information as to names is to be gleaned; so when we find strange spidery Casuarinas, beautiful Grevilleas, Acacias, Eucalyptus, and all the well-known types of Australian vegetation, jostling Pepper trees (Schinus Molle) from Peru, giant bushes of Wigandia from the Caraccas, just now unfolding their massive heads of purple cheek by jowl with an English Sycamore, Sparmannia africana under the shade of the American Magnolia grandiflora, the Japanese Medlar (Eriobotrya japonica) side by side with the Italian Cypress, Phœnician Olive and Palm, and a thousand other contrasts, yet all thriving equally well, one may be pardoned for not knowing where to begin, or for doubting in what quarter of the globe one is, or what the season of the year may be; and, if from trees and shrubs we turn to flowers, we meet everywhere the same paradoxes, Roses and Wallflowers, Heliotropes and Crocuses, Bougainvilleas and Passion-flowers, Violets, Salvias, and Camellias, all in full flower together, make what seems a strange medley of beauty in the open air for the last days of February. All this is strictly true, but it can only be seen by those who have access to the private gardens of residents who live on the slopes near the Villefranche road or the Cimiery Hill, where the care taken in watering during the long periods of drought and the sheltered position suffice, with half the labour of an English garden, to produce such results. Anybody who hurriedly glanced at the arid mountains and dust-whitened trees in the streets or public gardens would refuse to believe that such Edens are close at hand. The other day when visiting the garden of a lady that is justly renowned for its flowers, there were one or two things so remarkable for the time of year that I cannot refrain from describing them. An arcade of white Roses and Kennedyas alternating up the pillars (of Roses, Lamarque, and the old red Bourbons Gloire des Rosamènes and Comte Bobrinski, and of Kennedyas the purple, pink, and white varieties), while overhead a canopy of the large white Banksia Fortunei and Bignonia grandiflora, already in full flush of early beauty, was a sight not easily to be forgotten; under the grateful shade, bushes of Daphne indica and carpets of Cyclamen persicum and Neapolitan Violets covered the ground. A little further down the hill the high terrace wall was hung with Bougainvillea spectabilis and glabra just in flower; Maréchal Niel, in every stage, from the full-blown flower to the smallest bud; scarlet and pink Geraniums, and Linum trigynum, with its large yellow flowers (almost reminding one of an Allamanda) were a blaze of bloom; Heliotrope in quantity toning down the gaudiness with its soft lavender flowers added, with Mignonette, another sweetness to the already scented air. A large patch of Echeveria metallica, with deep, salmon-red flower-stems 6 ft. high, was most striking, and in the less trim parts the Orange and Lemon trees (both in full fruit, and the latter in flower), also were pictures of health and beauty. One variety of Lemon, a Spanish sort, was very remarkable for the excessive thinness of the rind and absence of pips, so that there was twice as much juice as in an ordinary fruit. Many sorts of Salvia, and Tacsonia ignea, Camellias, and Carnations were laden with flowers of great beauty, but my attention was specially drawn to the abundance of Roses; few of course at this early season are of show quality, such sorts as Safrano, Souvenir d'un Ami, Souvenir de David, and Lamarque, being, with the Red Bourbons I mentioned before, the freest winter-bloomers; but one new kind, evidently a seedling from Souvenir d'un Ami, but dwarfer in habit, deeper in colour, and more open in shape, seemed to me of great excellence and size. Comtesse de Nadaillac is pronounced here to be the most beautiful and sweetest apricot-like scented Rose of recent introduction, but, like Cloth of Gold and many other favourites, it is reserving itself for Easter apparently, having bloomed so abundantly in November and December as to require a rest. To obtain this abundance of winter beauty, all the flowers in summer are pulled off, and no more water given them than is requisite to sustain life, when in September the life-giving

A MEDITERRANEAN SHORE GARDEN.

autumn rains fall, they are severely pruned (excepting Cloth of Gold), and thus produce in November and December —and, indeed, all through the winter—a profusion of flowers, while, after the March rains the blooms are again most beautiful. In the market the masses of Violets, both double and single, Anemones of all sorts and colours, Narcissus, Myrtle, sweet-scented Geranium, Wild Hyacinths (H. orientalis), to say nothing of what are called garden flowers, make one long for a time when distance can be sufficiently annihilated for us in England to see something of their freshness and beauty. In spite of the continued drought, deep-rooted trees, such as Planes, are bursting their buds, and Weeping Willows and Almonds are in their loveliest green, but a heavy rain for a day or two falling on the earth, heated by the baking sun of the last fortnight, would make everything grow as if by magic, and fill the Pea-pods that seem to flag in the heat of the last week. Such is the extreme difference between the winter of this sunny region and the wet though mild winters of the west of Europe and England, that it seems wonderful that any plants should be common to both, and adduces another proof of the admirable provision by which they can support such opposite climates. E. H. W.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Camellias.—Amateurs frequently find considerable difficulty in growing Camellias well, not that they are hard to manage, but by reason of their being too often subjected, together with other greenhouse plants, to one uniform course of treatment of heat, air, and moisture; whereas Camellias require, for a considerable portion of the year, a treatment very different from that of the greater portion of plants usually grown under glass. The result of this is that they are often met with insufficiently furnished with leaves—a condition that at once precludes the possibility of their making sufficient growth, and producing the proper quantity of flowers; in fact, the vexatious disposition that Camellias frequently have of throwing off their buds in the autumn is often traceable to the unhealthy state of the plants, lacking the necessary vigour to bring them to maturity. As the present is the best time of the year to remedy this state of affairs, a few words on the subject may not be out of place. Camellias are plants that require shade, especially when making their growth, at which time they also like a moderately warm situation, with abundance of moisture both at the roots and in the atmosphere. Where there exists a vinery that was started a short time back, they may be placed in a corner, not crowding them too much, and if the Vines be not sufficiently advanced to afford them the requisite shade, a thin piece of scrim should be hung between them and the Vines as a protection from the sun, which this month in bright weather is too powerful for the young leaves of the Camellias. Before putting the plants in heat, if there be any doubt about the soil being sufficiently permeated with moisture, soak them in a pail of water for twelve hours. Syringe them freely every afternoon when the house is closed, and give water to the roots as needed, as they require a greater quantity than most subjects; manure-water, in a clear state, with soot added in the proportion of a handful to two gallons, will much benefit them. Manure-water is sometimes recommended for Camellias at other times than when they are making growth, but I do not think it is of any assistance. Young plants that have made long shoots should have them shortened back; a reluctance to use the knife sufficiently in the early stages is too often the cause of naked, unsightly branches in after years. Any large specimens that are thin and deficient in the close, bushy habit indicative of good management, if they have plenty of roots, may be cut in freely, as there are few plants that bear this operation better. After cutting back, treat them as above in other respects, being careful not to overwater until they have made some fresh shoots. If at all infested with scale, they should be well cleaned before being started into growth. Unless in the case of plants that are suffering seriously for root-room, it is better to defer potting until after the growth is made.

Fuchsias.—In a vinery of the description above mentioned, old plants of Fuchsias that have been started for some time will progress more favourably than in a greater heat. As soon as they have fairly broken they should be turned out of their pots, two-thirds of the old soil removed, and re-potted in new, good ordinary turfy loam, to which has been added one-sixth of rotten manure and some sand, pressing it firmly in the pots; use the old pots if sufficiently large, if not, re-pot in some 2 or 3 in. larger. When potted, put a stick in the centre of each, to afford support; syringe them overhead every afternoon, but do not give too much water at the root; in a few weeks they will be enabled to bear more. When the young shoots have grown about 3 in., pinch out all the points, to induce a bushy habit. Autumn-struck Fuchsias should also be stopped, as the side shoots require it, pinching out the points of the leading shoot as well; if this be not attended to, they will run up too high, and never have that dense profusely furnished appearance so desirable in well-grown specimens.

Croweas.—To get these most useful long-flowering plants into bloom early in the autumn, they require to be pushed forward in a little heat about this time, with the above-mentioned Fuchsias, cutting them back to within 6 in. of the points to which the shoots were shortened last year. They are liable to brown scale, and if this insect be found upon them before being started, thoroughly wash them with "Fowler's Insecticide," 6 oz. to the gallon of soft water, using it at a temperature of 90°; prevent, as far as possible, any of the mixture from getting into the soil, by placing the plants on their sides until dry.

Miscellaneous Plants.—One of the most useful subjects for either large or small gardens is the old Calla (Richardia) æthiopica. The best system of growing it is to plant it out-of-doors in good soil in the summer; so managed the indoor room is economised and the plants grow much faster and shorter in their leaves than when kept in pots through the whole year. To prepare them for turning out they should, when the flowering is over, be taken out of their pots and the soil shaken from them, after which take off the suckers and pot them according to size, singly or two or three together in 6-in. pots. They will thrive in any ordinary soil to which has been added enough sand to prevent its becoming sour; for, although almost an aquatic plant, Calla æthiopica cannot succeed in sour adhesive material; after the suckers are taken off replace the old plants in their original pots, and keep them close until they commence growing, after which place them where they will receive plenty of light to prevent the leaves from being drawn up weakly until the middle of May, when they may be planted out 15 in. apart. This is one of the best room plants that amateurs can grow; and, if managed in the above way, it never gets so long and straggling in the leaves, and will bloom much more proportionate to the size of the plants than when kept altogether in pots. A few Ghent Azaleas, Deutzias, double Chinese Plums, broad-leaved Kalmias, and Rhododendrons, should now be put in any house or pit that may be in use for other plants, with a little heat in it, and will come in usefully either for decorative purposes or for furnishing cut flowers. Where Rhododendrons are used, early flowering kinds should be selected, as they will open their flowers with very little forcing, whereas many of the later blooming sorts will not force at all. There are few better for this purpose than R. caucasicum album, R. c. pictum, and Cunningham's White; these are old kinds, but dwarf and flower profusely in a small state. Hardy shrubs of the above description that have been flowered in pots, and have discontinued blooming, should not be turned out-of-doors without any protection, but ought to have accommodation provided in a cold house or pit until later on, when they can be again planted out. Deutzia gracilis makes a first-rate plant grown on in pots for forcing year after year; it should be grown in a slight heat after flowering. When it has bloomed, cut out to the bottom all the old flowering branches, as a number of young shoots usually make their appearance from the collar of the plant that will grow on for another year; when their growth is complete they can be plunged out-of-doors in the summer; they will bloom much earlier if required next winter, and with less heat than plants removed from the open ground that had not been so prepared.

Peaches that were started some weeks ago will be opening their bloom; be very careful not to allow the temperature to get too high either by night or day; regulate the amount of heat in the pipes during the night according to the state of the weather, stopping it early in the mornings when there is an appearance of the sun shining brightly. Syringe the trees overhead once a day, and damp the soil inside, but do not render the atmosphere too damp in dull weather, closing the house so as to let the thermometer rise considerably when the afternoons are sunny, and, of course, earlier when they are dull and cold. In fruit forcing, early or later on, it is essential to keep an eye on the weather from morning to evening, and act accordingly, otherwise the extremes of temperature are sure to become fatal to the success of the crop.

Vineries.—Vines that were started as recommended some time back, will by this time have made sufficient growth to require their shoots being tied up. In an amateur's vinery, where there will be many plants grown under the Vines, it is not well to have too many Vines. If the canes be 4 ft. apart, and the bearing shoots stopped at the joint beyond the bunch, and not allowed afterwards to extend above another joint past where first stopped, the plants grown underneath will obtain a greater quantity of light. The temperature of the house may now be raised a few degrees, but amateurs will do well not to hasten the growth of the crop, as a slower growth is much more likely to be successful. Give a little air on bright mornings sufficiently early to prevent the young leaves from being scalded, opening the top lights a little wider further on in the forenoon, being careful not to admit too much of the cold cutting winds which for some time yet will be too keen for the Vines, even when the sun is very powerful; in such weather distribute plenty of water over the paths and walls, which will counteract the combined drying influences.

Pits and Frames.—Where there are the appliances for growing some Melons to come in moderately early, seeds may now be sown, putting them singly in small pots, as recently suggested with Cucumbers; they will thrive admirably in a Cucumber bed already at work.

The Conservatory.

Passifloras and Tacsonias.—Most kinds of climbing plants will now be starting into growth, and many of them, such as Passifloras, Tacsonias, and others of that class, that flower on the young wood they make, must now be pruned in. The whole of last year's growth should be entirely removed, unless any portion be required for laying in to train over bare or vacant places on the girders or elsewhere. It is best, however, to do this by degrees, so as not to denude the plants entirely of their old foliage till some of the pruned-in part has just started, when the remainder may at once be cut away. This treatment will save any check the plant might otherwise receive if stripped all at once of its foliage. Most of the Tacsonias are worth growing, but there are two or three that should be in every conservatory of sufficient size to accommodate them; T. Van Volxemii is, perhaps, the most striking, on account of its brilliant colour and the number of flowers it produces. These are borne on long thread-like stems, that move to and fro whenever the air of the house is in motion, and, as they hang so far beneath the foliage, they are shown off to good effect. T. exoniensis is a hybrid between the above and the well-known T. mollissima, and is a very desirable variety. The flowers are of a deep rosy-pink colour, with violet throat. The plant partakes more of the hardy vigorous habit of mollissima, and combines the good qualities of both parents as to freedom of bloom. They are very subject to a small white scale, which sticks to the bark and leaves with the greatest tenacity, and is most difficult to eradicate unless very strong solutions of insecticides are applied. As most of the old leaves of these will now be pruned away, a good opportunity will be afforded to get them thoroughly clean before the scale has a chance of effecting a lodgment. To do this, scrub the old bark well with a stiff brush, and every crevice or lurking place in it should be wetted with a solution of Fowler's Insecticide; dose—six ounces to a gallon of soft water. A cleansing of this kind now will keep them free for some time; but, if neglected, the health of the plants will be greatly impaired. Examine whether the borders in which they are growing are in a proper state as to moisture; if at all dry, make sure that they have sufficient water to soak the whole of the border well through to the drainage. Should the plants be much limited as to space for root-room, as is often the case where appearances have been more studied than the requirements of the occupants of such structures, they will be greatly benefited by having as much of the old soil removed as can be done without injury to the roots, replacing the same with some good fresh turfy loam and well-decomposed manure. Where climbers are failing from age or other causes, or are unsatisfactory in any way, the present is the best time for replacing them. This should be done by re-making the border with rough fibry loam, and substituting good strong plants for such as are removed, which will then fill a large space during the summer if properly attended to with water.

Camellias.—Those still carrying a crop of flowers should be assisted by giving them clear soot-water whenever the soil in which they are growing is in a fit state to receive it. If well drained, and the plants are healthy and vigorous, they will take rather liberal supplies of water at this season; at no time should the soil be allowed to become really dry. Where Camellias are planted out they should have what pruning is necessary to confine them to a limited size directly they have discontinued blooming, as delay in this matter means late growth, and, as a necessary consequence, late bloom. In many cases it is often the best plan to allow them to make all the growth they will, and leave them until they have set their flower-buds before any pruning or thinning takes place. After that, any wood grown out of place, or such as is bare of buds, can then be removed; the whole strength of the plant will then be concentrated in that remaining, so that the flowers increase in size, and are seen to better advantage than if the plant were crowded with wood at the time of blooming. By treating them as above, the young growth is not retarded, as would be the case were the prominent wood-buds cut away, when others in a less forward state of development would probably be at least a fortnight later in starting. Camellia flowers are so much more valuable in winter, lasting double the time than later in the season, that every effort should be made to produce an early growth, as it must be borne in mind that Camellias will not force, and the only way to get early flowers is to get early growth. With this view, any that are in pots should be removed to some forcing house, where they can have the necessary shade, heat, and moisture. A Vinery or Peach house at work will afford this, or failing either of these, any other where they can be kept warm and well syringed, as well as being shaded from bright sunshine will do. When Camellias in pots are out of health, rid the roots of as much of the old soil as can be got away without injuring them, and re-pot in some good rough peat and loam, afterwards plunging the plants in a gently-fermenting bed of leaves or other mild bottom-heat, where they can be treated in the way above described. They will stand a deal of heat while making their young growth, provided the moisture is proportionate. During the earlier stage, the air should be kept almost in a state of saturation, especially if the plants have been much disturbed at the roots. A dry atmosphere is not favourable to the health of Camellias at any time, and where the air is unsuitable in this respect, it is impossible to have them in first-rate condition.

Azaleas that have been forced should, as they go out of bloom, have all the seed-pods picked off, and be placed where they can have a moist heat to enable them to continue their growth. Any that are at all pot-bound ought at once to be shifted into pots of a larger size; those affording the space of 1 in. or so all round the ball will suffice, as it is better to give only moderate shifts than to overpot, especially in the case of hard-wooded plants, where there is always a danger of over-watering. Before potting, see that the balls are properly moist. If there be any appearance of dryness in the centre, soak them through by immersing the pots for twelve hours in a tub of water, and then let them stand and drain for a day or two before potting. By having the balls in a healthy, moist state before shifting the plants, it obviates the necessity of watering till they get hold of the new soil, and unless this be done, there is a risk of its becoming wet and sour before the roots get into it; besides, it is a difficult matter to moisten the old ball if dry at the time of potting, as the water passes too freely through the new soil, while the old is comparatively impervious. In potting, ram the soil as firm as possible, using a properly made potting-stick. The top part of the ball of the plant ought, in a 6-in or 8-in. pot, to be kept about ¾ in. below the rim, increasing gradually with the larger sizes so as to ensure them holding sufficient water to permeate the ball thoroughly, thus rendering a second watering unnecessary. See that the peat is good and suitable for the purpose, as well as in a fit state for use. It should be rather on the dry side than otherwise, for if wet, the necessary ramming to get it firm would end in making it close and pasty. Peat, to be rich in vegetable matter, should contain a good deal of root fibre, and be of a dark, nut-brown colour, nearly free of sand. The top part of the spit is sure to be the richest and best on account of its containing more fibre and a larger quantity of decomposing vegetable matter. In potting choice hard-wooded plants, such as Heaths and Azaleas, that have to remain long in the same-sized pots, a careful selection of the soil should be made and saved expressly for the purpose.

Stove and Greenhouse Ferns.

Where these have not been already re-potted no time must be lost, for if the young fronds be allowed to start much in growth before the roots are disturbed the plants receive a check from which they do not recover for the rest of the season, the first and strongest fronds being arrested in their development and becoming crippled and deformed. As it is almost impossible to reduce a well-matted ball of a Fern in the ordinary way by picking the soil out from among the roots, the readiest and most expeditious manner is to cut it clean off with a large sharp knife. Of course, where the size of the pot is no object, and the Ferns are grown for specimens, this practice is not to be recommended, as the best way in that case is to give them a shift in the ordinary way. In most places, however, Ferns are not grown in pots for specimens, but more generally for decorative purposes, and the size has therefore to be limited, and it is better to divide them as described above than to tear their roots in a vain effort to disentangle them. After being cut the main roots soon start a number of fresh feeders, and there are always plenty of others farther in the ball that are ready to push through into the fresh soil, so that the plants are quickly at work again. Few plants are more tenacious of life than Ferns, or more readily submit to having the roots severed and the ball reduced in the way they do, and this renders them of more value for decorative purposes, as they can be kept to any size. Gymnogrammas showing two or three distinct crowns may be split through and reduced in that way, when each will make a separate plant. Adiantums and others of that class may be cut into as many pieces as desired, and each will soon commence to grow vigorously when potted in fresh soil. The beautiful A. Farleyense divides readily, and may be as safely operated on in this way as any of the commoner varieties. Gleichenias are more difficult to manipulate, and should therefore be handled carefully. These may be increased by layering into other pots any of the wiry rhizomes that sufficiently protrude. As soon as growth has commenced, watering must become more frequent, especially in the case of such as are cramped for root-room, in which state, with free drainage, they can scarcely have too much. Syringe freely overhead at least once a day, whenever the weather is bright and clear, all except Gymnogrammas, which become much disfigured if the dust-like powder be washed on to the upper part of the fronds. If these be syringed at all, it must therefore be very lightly, and so as not to hit the undersides, simply allowing the spray to fall as a mist over their heads. Gradually remove the old fronds as the fresh ones emerge from the crowns, and watch closely that no young scale fix themselves on the young leaves, or they will spread with great rapidity. Keep the air of the houses close and moist for the present, to encourage the plants to make a start and take hold of the fresh soil, after which air in moderation may be admitted whenever the weather is favourable. Be prepared with the necessary shading material to put on houses much exposed to the sun, unless creepers are grown for the purpose, which are preferable, if they be kept within due bounds.—J. SHEPPARD, *Woolverstone Park.*

Hardy Fruits.

If we may take the quantity of buds as an earnest of the fruit crop, the prospects for the present season are really good, for all kinds of fruit trees are exceptionally well furnished in that respect. This is the more surprising if the unfavourable character of the weather for maturing their growth during the greater part of last summer and autumn be taken into account, and though of a necessity there must, through the cold sunless weather, be a large per-centage of malformed or improperly developed buds, still, if the spring frosts do not prove too destructive to the blossoms when open, we may reasonably anticipate a fruit harvest of more than average abundance. How to prevent the blossoms unfolding till all danger from frost is past is a problem that still requires solving. Now that Apricots and Peaches are in flower, see that every attention be paid them to ensure a successful set; the blinds or coverings should be let down every night, and it will be advisable to keep them covered during the prevalence of cold north-easterly winds or heavy rains, and if the sun should be very bright they should also be drawn down for a couple of hours in the middle of the day. If bees be not seen at work amongst the blossoms, shake the trees once or twice daily to distribute the pollen. I was last season taken to task because I advised that, if Gooseberry bushes were in bloom and a sharp night seemed imminent, they should be protected by shaking dry hay or bracken over them; but I only spoke well of "the bridge that had carried me safely over," and therefore reiterate my conviction of the utility of such a preservative practice. Small bushes of Apples and Pears, or lines of cordons, may readily be protected by treble-ply fish netting, tiffany, or the thick spray of Birch or Fir branches, laid against the trees; at any rate, if the blossoms be there, and the weather threatening, the determination should be to save them at any cost of labour or trouble. Figs that have been protected during the winter should have been uncovered ere this, and the shoots nailed or tied to the walls. As a rule, pruning of them is at this season undesirable, though if crowded the most weakly shoots may be taken out. On cold nights, protection must be given, or the embryo fruit will drop as soon as the sap gets into active motion. The season for grafting Apples and Pears is at hand—indeed, may now at any time be performed if scions of new or improved varieties can be obtained. Many so-called improved kinds of both have of late years made their appearance, and though some have been disappointing, others have proved to be real acquisitions, amongst which may be named the following:—*Apples:* Lady Henniker, Annie Elizabeth, Lord Suffield, Peasgood's Nonesuch, and Balchin's Pearmain. *Pears:* Brockworth Park, Madame Treyve, Pitmaston Duchess, Beurré Hardy, Beurré de l'Assomption, and British Queen. All the above-mentioned are, without exception, first-class additions to our lists of fruits. Remove the ground-suckers from Nut trees, and thin out straggling branches, that being all the pruning that is either necessary or desirable. It is not yet too late to make a plantation of them; a row makes a good boundary to an orchard, or a capital screen and protection to an exposed part of the kitchen garden.—W. WILDSMITH, *Heckfield.*

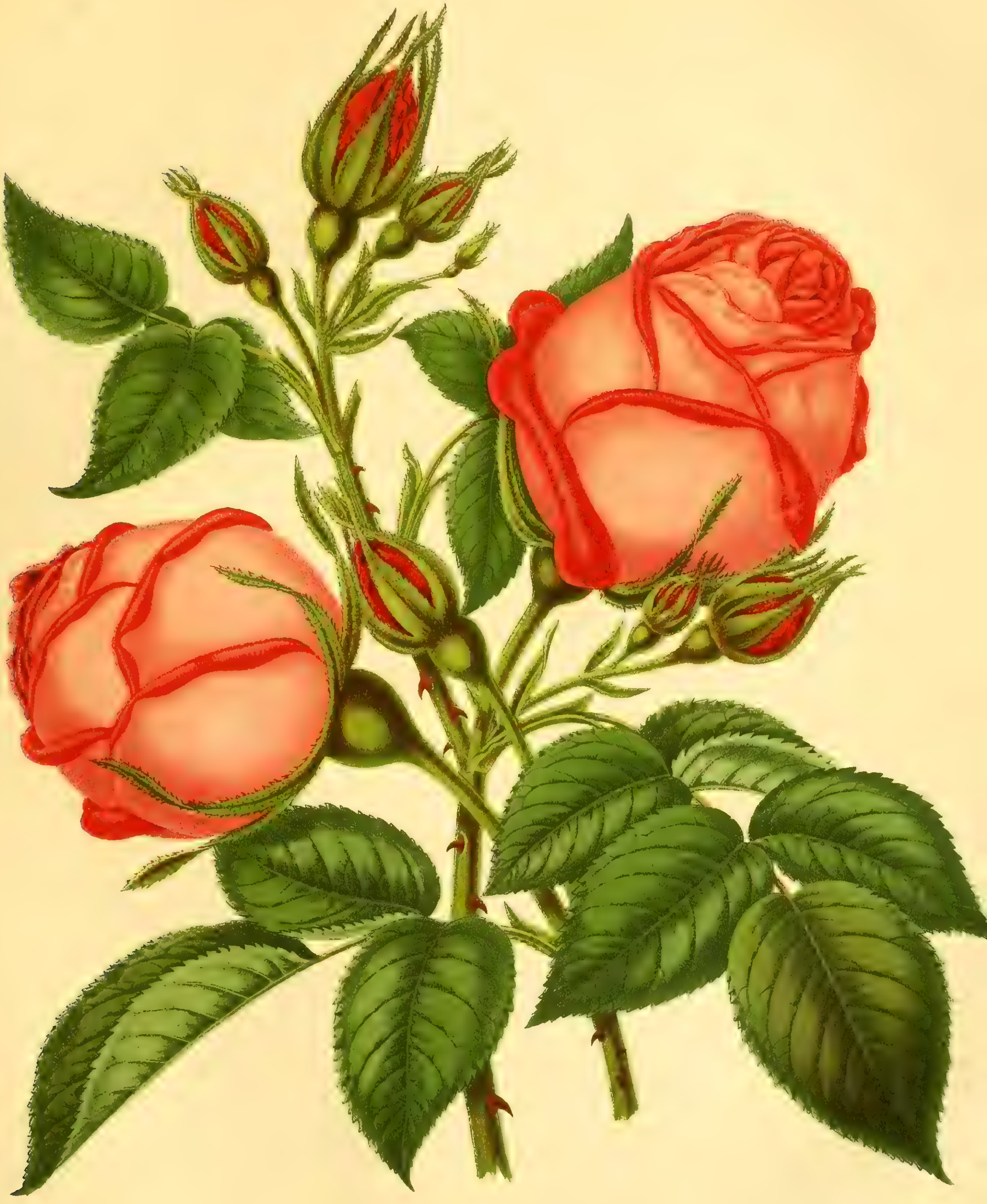
PLATE XII.

ROSE CATHERINE BELL.

Drawn by H. HYDE.

The annexed illustration is a faithful representation of a new seedling Rose raised by Messrs. Bell and Son, of Norwich, but not yet distributed. Its conical form and thick, revolute petals give it a distinct appearance, while in colour it is bright and effective, the inner sides of the petals being a glowing crimson, and their backs a delicate, silvery rose, inclining to lilac. In foliage and general habit it somewhat resembles Centifolia rosea, but even surpasses that well-known variety in vigour. It will, therefore, form a valuable addition both to out and indoor Roses. Its blooms last long in beauty in a cut state; indeed, the flowers of it, sent to THE GARDEN office for the use of our artist, retained their freshness longer than other kinds cut at the same time, and placed under the same circumstances. Many of our best new Roses of late years are English seedlings, which are now becoming so numerous that it may soon be desirable to have classes set specially apart for them in flower-show schedules, in order that we may be able to show them against the best of the French varieties. We have recently directed attention to the facility with which new Roses of undoubted merit as regards hardiness, vigour, form, substance, and colour, can be raised in our gardens, and we again refer to the subject with the view of inducing English Rose growers to commence the raising of seedlings in earnest, seeing that those who have already tried the experiment have reaped such splendid results. That lovely Rose, Devoniensis, was accidentally raised from a seed-pod of Smith's Noisette, which its raiser, Mr. Foster, of Devonport, bought, simply from the fact that the seed-pod borne by it was nearly ripe; and so highly was this variety esteemed that the late Mr. Pince, of Exeter, "booked" 1000 one-guinea orders for it ere it was distributed. Roses being everywhere welcomed and cultivated for their beauty and fragrance, it follows that a really good and distinct seedling is of considerable value to its originator. One of the first of all requisites in raising new Roses is to select vigorous varieties of first-rate excellence, and, as a matter of course, it is necessary that they produce seeds freely. Amongst seed parents in the Hybrid Perpetual class we have found General Jacqueminot, Jules Margottin, Centifolia rosea, Gloire de Santenay, and John Hopper to be good; and some of the best of our new Roses have been obtained from these kinds. It was long thought impossible to obtain crosses between varieties belonging to the Hybrid Perpetual and the Tea-scented sections, but this has now been effected by M. Lacharme, who has his seed-bearing Roses trained on a south wall, where they begin to flower in April; but, says that eminent French raiser, these first flowers are very full and but little disposed to bear reproductive organs, consequently little adapted for fertilisation. It is necessary to restrain the first blooming, so as to arrive as soon as possible at the second flowering about the end of June. These later flowers are not so double, and are better adapted for the purposes of fertilisation; and he remarks that while some have recourse to artificial fertilisation, he has little faith in it, and does not practise it himself, although he adds that the seed-bearing plants should be from ten to twenty years old in order to produce really good new kinds. Most of the Hybrid Perpetual class ripen seeds in the open air in this country, but in the case of the more delicate Tea-scented and Noisette varieties it is advisable to plant them under a sunny glass-covered wall. The seed-pods should be gathered in dry weather as soon as they are ripe, and stored in pots of dry sand until spring, when they may be opened, and the seeds sown in well-drained pans of fresh, open, sandy compost, and placed in a cold pit or frame to germinate. Seedlings thus treated make rapid growth, and often flower the following year, but it is difficult to form any opinion of their merits until they are two or three years old. If they show any signs of future excellence, it is well to work a few buds of them on the Briar or Manetti stock, so as to give the variety a better chance of full development. The history of the early variations of the Rose is lost in obscurity; but there can be no doubt that the Roses of our own time have originated from the blending together of the different species. B.

Supplement to *The Garden,* Office 37 Southampton Street, Covent Garden London W.C.



ROSE, CATHERINE BELL.

THE INDOOR GARDEN.

THE CHRYSANTHEMUM, BOTH FOR EXHIBITION AND CONSERVATORY DECORATION.

By F. T. DAVIS, Plumstead.

THE Chrysanthemum, owing to the ready way in which it adapts itself to any soil or situation, is eminently suited for town gardens, being an excellent smoke-resisting plant and one that amply repays the cultivator for any extra labour bestowed upon it. Specimens for exhibition certainly require considerable attention and plenty of stage room, but those who merely desire flowers for decoration in a cut state, and who have but limited time and space to spare may, by attention to the following directions, be able to have a display of flowers from the first week in September onwards well into January by growing such kinds as Katherine Talfourd, Jenny Lind, Mr. George Haskin, Virginale, and some of the Japanese section. The value of Chrysanthemums for church decoration, as well as for general purposes at Christmas, appears to have been overlooked, as by a judicious selection of varieties the conservatory may be made to look quite gay at that festive season.

Flat-topped or Convex Plants.

Few subjects for purposes of exhibition excel in effectiveness Chrysanthemums grown in this way. In starting plants of this kind, two or three modes are employed, though of course they all resolve themselves into one after the first or second shift. Let us suppose that the grower wishes to produce a large convex specimen, such as is usually grown for exhibition, and further that he has not stock with which to begin: his mode of procedure will be the same as mine was the first year, in which I commenced to grow specimens, although in the next and succeeding years he will be able to get a larger plant, from the fact that he will have old stools with which to deal. Obtain some strong well-rooted cuttings established in 60-sized pots; these should be stopped (*i. e.*, the top taken off with the finger and thumb), to about four or five joints. Some recommend the extreme point only to be taken off, but, speaking as I do from experience, I can certainly say that such a course is not to be recommended, for if the joint only be removed the bottom eyes will not start, and the cultivator's aim should be to get as many breaks as possible from the first stopping. The course which I generally adopt is, to allow the plant to get about 10 in. or 12 in. high, and then to reduce it to four or five joints, thus ensuring the whole of them breaking. Supposing the plants to be kept in a temperature of about 50° or 55°, they will in a few days commence to break, and as these breaks form the groundwork of the future specimen, great care should be taken to induce good, free growth. As soon as the breaks are about 1 in. long, the plant will be ready for a first shift. The sized pot into which I generally shift is that known as a 48 or 5-in. An important point, and one to which I would direct the special attention of cultivators, is never to shift and stop at the same time advice certainly old, but nevertheless good. About a fortnight or so after shifting the plant into a 48-sized pot, it will be ready for another stopping, and as before care must be taken to ensure all the eyes breaking, as these breaks so multiply themselves that they are of the utmost importance where good-sized specimens are wanted. Attention will now be required in the way of keeping down green fly, for the destruction of which I have found nothing to equal clean water vigorously applied with the syringe. In fact, if the syringe be used as it should be, green fly will not be troublesome; but if it should make its appearance and resist the syringe, it may be removed by dusting the growing points with Tobacco powder. At this stage, if room can be spared, I usually insert the pot containing the plant into a very large pot (say No. 8 or 12), and fill up, keeping the top of the 48-sized pot on a level with that of the larger one; and as the breaks push out, these are pegged down by the aid of a few pieces of wire, an operation much more easily done now than later, besides running less risk of breakage than when the wood is allowed to set. They may remain in the 48-sized pot until about the last week in April (stopping in the meantime, if necessary), when, if the plant has done well, it will be ready for its next shift into a 24 or 16-sized pot, according to its size. A word of caution is here necessary in order to warn growers against letting their plants remain a day after the roots have touched the sides of the pot. They should now be removed to a cold frame, taking care to cover well up at night and during cold winds, for although Chrysanthemums are perfectly hardy, they should be kept growing, in order to ensure a good bottom; in fact, it would be better to keep them in a greenhouse were it not for the sudden bursts of sunshine that occur about this time and the increasing warmth of the atmosphere, which induces the plant to become drawn, as it is called, an evil which I would most strongly impress upon the grower to avoid. About the end of May move the plants to the open ground; although, even then, if a little protection, such as that of a few Spruce branches, &c., be afforded them at night, they will be all the better for it. Plunge them about half-way up in a bed of coal ashes; set in the pots on a piece of slate, in order to keep out worms. The breaks as they grow must be stopped, and pegged down level with the edge of the pot. Some recommend the pot to be plunged in the ashes, right down to the rim, but if this be done, the foliage is liable to get splashed and dirty, and, therefore, the removal of some of the best developed leaves becomes a necessity. About the end of June, the plant will be ready for its last shift. The size of the pot in which it is to bloom will depend upon the growth which the plant has made; if very vigorous, use an 8-sized pot; if of medium growth, a No. 12 will suffice. The former size is required only in the case of very large specimens. The plant will now have acquired a pretty good size and its growth must be kept well pegged down. The pegs which I generally use are made of pieces of bundle wood, such as that employed for lighting fires, sharpened to a point, a stout piece of wire being inserted in the other end, and bent over to form a crook (fig. 1), which will keep the growth pegged down at any desired height. About the second week in July the plants should be stopped for the last time; and, as this is an operation of great importance, it should be done in a manner that will ensure an even and well-balanced specimen.

Pompones.

With these, the only difference to be observed is, that the later shifts need not be so large as those for ordinary kinds, and that the last stopping may be performed in the first week in August; with these exceptions the mode of procedure with regard to both sections is the same. Now that we have got the plants into their blooming pots, and the last stopping has been performed, they will grow rapidly. They should be syringed vigorously, especially in the evening, and be watered overhead through a fine-rosed watering-pot. Avoid the use of stimulants, as I feel convinced from experience that Chrysanthemums do not require them until the roots have begun to fill the pots, when very mild doses should now and then be administered. The secret of keeping the foliage healthy and of a deep green colour, consists in using judiciously clear house sewage, diluted in the proportion of one pint to a gallon of soft water. If the plants be kept well syringed with this, the cultivator will require nothing else. By the use of this liquid I have been able to keep the foliage of my plants in such a manner as to be the admiration of all who have seen it. The plant will now be getting into shape and making vigorous growth, which should be allowed to be somewhat higher in the middle than on the outside, in order to give it the form of a dome. As the flower-buds appear, they should be thinned, or what is termed "disbudded," that is, the middle or crown-bud of the four or five that form it should be left. Even beginners will have no difficulty in this matter, as the crown-bud, as its name implies, is always on the top, and the largest of the cluster. The time has now arrived for the grower to set about "shaping" his specimen. Of course he will be able to ascertain at a glance the size at which his plant will arrive; and, having in the meantime prepared a quantity of small sticks, made by splitting up builders' laths, and properly rounding them, he will proceed to train and tie. Some like their plants flat in appearance, but I am in favour of raising them in the centre, *i. e.*, a plant 4 ft. in diameter may be

2½ ft. high in the middle. This, in my opinion, improves the appearance of the plant. Having found the middle of the plant, the cultivator will stick and tie up a prominent shoot as a beginning, and this will be followed round and round, of course getting lower and lower, and by careful attention he will thus be able to clothe his specimen with healthy young branches down to the very edge of the pot. Of course, all the bare wood and sticks must be had, and all dead and decaying foliage removed, and, before tying is commenced, all suckers and blind growth must be removed. When the buds are forming is the time to commence the use of liquid manure, increasing its strength as they show colour, and continuing its use until the flower is fully developed. About the second or third week in October, plants treated as above directed should be removed to a cool greenhouse, giving them air on all favourable occasions, and taking care to avoid the use of fire-heat except when necessary to exclude frost. In 1871 we had a very severe frost early in November, and those who were able to give just sufficient warmth to keep it out made a much better display than those who had no such convenience; but still, as a rule, Chrysanthemums are best without fire-heat.

Pyramids.

These differ, as regards culture, from the preceding in having the bottom shoots left of sufficient length to form the base of the plant, and in having a strong shoot led up the middle so as to form a cone. The best-shaped pyramids are those grown on a frame, which is made by laying two cross pieces of wood on the top of the pot with a ring of iron wire outside forming a circle, to which are attached three or four upright wires, tied together at the top. This frame (fig. 2) may be attached some time after the final stopping, as soon as the operator has ascertained the size of the plant which his breaks are likely to make. The same course must be pursued with regard to Pompones. A fair size for pyramidal plants is 4 ft. through at base and 4 ft. 6 in. in height in the case of large varieties, and 2½ ft. at the base and 3 ft. in height in that of Pompones. Plants of these sizes, when well grown, are as near perfection as possible. I may here remark that after Chrysanthemums have once bloomed they need not be thrown away; on the contrary, they may be used again and again for many succeeding years if treated as follows:—When blooming is over withdraw the sticks and frame and cut the plants back to where the wood is likely to break, and if at this stage they can be assisted with a little warmth it will induce them to break more freely. When broken and the young shoots are about an inch in length shake the earth from the roots and reduce the latter, potting in as small pots as possible, and pursue the same course as has just been recommended. Plants that have been grown for blooms in a cut state may also be treated in the same manner; cut the stem down to 12 or 14 in. from the pot, taking care to remove all suckers. On this mode of culture full dependence may be placed; in fact, it makes the best plants. For those who do not care to confine their plants to a "single stem" the suckers need not be cut away.

Standards.

These owe their popularity to Woolwich and its neighbourhood. The plant which is to form a standard having been struck as early as possible, should be kept growing until it has reached 2½ or 3 ft. in height in the case of large-flowered sorts, and between 2 and 2½ ft. in height in that of Pompones. Having reached these heights, they should be stopped in just the same manner as has been recommended in the case of dwarf specimens, taking care to keep the breaks well down or "goose-necked," as it is technically called. They should be shifted and dealt with exactly as has been already described, and they should have the hood (fig. 3) put over them, as by getting it on early the trees can be attached to the wire-work, thus saving the necessity of having long strings from the pot to the break. The size of the hood which I generally use is 20 in. wide by 16 in. high for large-flowering kinds, and 16 in. by 12 in. for Pompones. If the grower can cover more space, of course, he will make a larger hood, but for general purposes he will find these sizes quite large enough, for it is much better to have the hood well covered than gaps here and there in the foliage. I may here mention that I am decidedly in favour of disbudding Pompones as well as large-flowering varieties, for, when not disbudded, the three or four blooms on the truss get crowded, and do not show themselves off to the same advantage as a single crown-bud does.

Cut Blooms.

Although plants are admired—and justly so—at exhibitions, yet they certainly yield in point of interest to cut blooms. The production of large blooms of good quality is an easy task, and it is surprising that we do not see more of them, for with but little skill and a small outlay, grand results may be obtained in the following way; and to business men, employed in towns all day, I can especially recommend its adoption. Cuttings should be obtained about 2 in. long (I find those that are short make the best plants), and inserted round the edges of small pots, and put out of the reach of frost until rooted, when they should be shifted separately into small 60-sized pots and kept in a cold frame, changing them from time to time until the final shift, which should take place between the 24th and end of June; in the meantime, they should be allowed to grow uninterruptedly without stopping. They should be set out in the open air on slates, in the full blazing sun, and not plunged. This will entail a little extra labour in watering, but it will ensure perfect ripening of the wood, without which it is useless to look for fine flowers. They should be liberally supplied with water that has been exposed to the action of the sun; or, failing this (as it is not always convenient to do so), the hardness of the water should be taken off by the addition of clear house sewage, in the proportion already recommended in the case of specimen plants. When the buds begin to show colour, and not before (except in the case of a plant that is losing its leaves, thus indicating abundance of roots in the pot), liberal doses of manure-water should be given till the blooms are developed. Growers need not be afraid of using this liquid in a strong state, as the Chrysanthemum is a gross feeding plant. I would recommend a little discretion to be used as regards the manner of giving it to them, as some varieties, such as Eve, Mrs. Halliburton, &c., are robust growers, and require a great deal of it; while others, such as Little Harry, Beverley, &c., will fail to make anything like the growth of those just named. Some may say that the use of liquid-manure should be discontinued when the bud shows colour; but, from my own experience, and also that of some of our best exhibitors, I feel certain that the flower needs such support when making its petals. The kind of reasoning adopted by some writers amounts to this, viz., that as soon as the plant

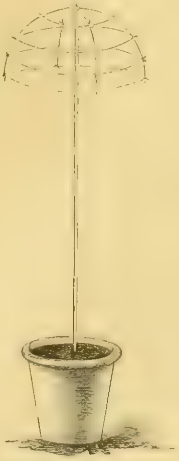


Fig 3 (trellis for standards).

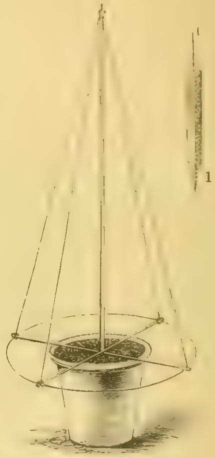
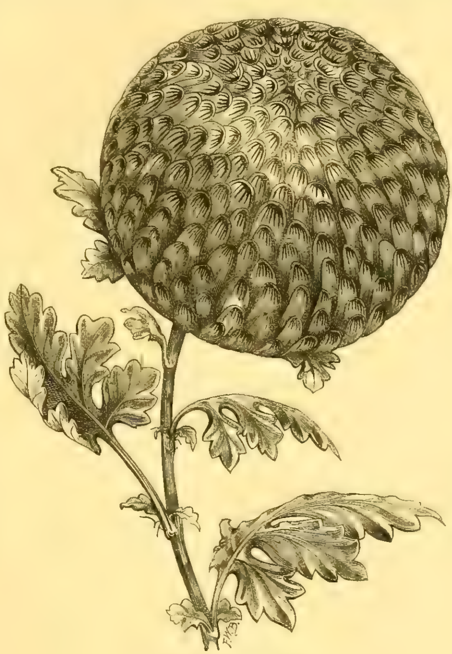


Fig. 2 (trellis for pyramids).

has abstracted all nutriment from the soil given to it at the last shift, we should discontinue giving liquid-manure; whereas giving liquid-manure after the soil has lost its good qualities makes up for the deficiency. Your readers will, therefore, I feel certain, see the advisability of adopting the course which I suggest. I must not omit to mention the necessity of removing all suckers that arise from the bottom of the plant, as these, if allowed to grow, will absorb all goodness out of the soil, to the detriment of the flowers.

Soil, Potting, and Dwarf Plants.

The compost which I employ consists of good loam in a rough state not stacked too long before it is used, as I prefer it rather fresh, added to half its bulk of well-decayed manure, and a very free addition of road grit or sand. The pots should be well drained with crocks and broken oyster shells, and, in the case of specimen plants a few pieces of charcoal, about the size of Walnuts, will be a beneficial addition, although I warn your readers to be sparing in its use, inasmuch as a little of it benefits plants, but an overdose causes them to shed their leaves. Those who have low-pitched houses will find the following mode of growing plants in a dwarf state very convenient. Supposing the plants to be growing freely, and had received their last shift prior to the blooming pot, about the first week in June take a sharp knife, and cut them down to as many eyes as blooms are required. By the time they have pushed shoots an inch long they will be ready for their final shift, and by following the same routine as already recommended, grand results will follow, and the plants, which will range from 1½ to 3 ft., will make fine subjects for conservatory decoration. The blooms will not suffer either in quality or size from this (what may appear to many) barbarous treatment. A very few will require cutting down some days earlier than the others; but this is a matter that the grower will learn by experience. In the event of the grower aiming at showing his blooms at the forthcoming exhibition, with only two or three at their best, and doubtful of their powers of lasting, I unhesitatingly advise him to cut them and place them in water in a cool dark place; for this I find ginger beer bottles filled with rain-water excellent. From experience, I am able to affirm that blooms stand much better thus treated than when allowed to remain on the plant. Give air on all favourable occasions; but, if the blooms are not likely to be out by the day of exhibition, give the plants a thorough soaking of water, water the paths, and shut the house up close. This will have a magical effect in hastening the development of Chrysanthemum blooms, without the attendant risks of fire-heat, such as causing them to reflex, &c. Another good mode of retarding the bloom, and one which I have seen tried occasionally, is allowing it to hang down in such a manner that it faces the mould; this, it may be added, has also the desirable effect, especially in the case of varieties with long petals, such as Prince of Wales, Golden John Salter, and many others, of causing the back petals to incurve properly, thus giving the blooms the appearance as represented in the engraving.



Incurved Chrysanthemum.

Select Kinds.

The following is a selection of some of the best varieties, both for cut blooms and for specimens. Many kinds are recommended for specimen growing that are really not worth the time spent upon them—they are either deficient of foliage, or the wood is too snappish, or they do not grow freely enough to form good, well-grown plants. For dwarf specimens, Mrs. Geo. Rundle, the finest white, and its straw-coloured sport, Mr. George Glenny, stand pre-eminent in all good qualities necessary for the purpose; Guernsey Nugget, primrose-yellow, can be confidently recommended on account of its free growth, being short-jointed, and possessing one of the best of habits; Hereward, purplish-rose, is also very fine, and can be grown with an assurance of blooming satisfactorily; Prince of Wales, purplish-red, although rather long in the petal, is nevertheless one of the best growers and bloomers, and should be grown in the most select collection; Mr. Brunlees, red, tipped with gold, is also very fine and attractive, and cannot fail to please; Jardin des Plantes, intense bright yellow, is desirable on account of its brilliant colour, and the blooms incurving without the least help; Lady Hardinge, bright rose, with silvery back petals, is one of the most chaste and beautiful in the class to which it belongs, and one which can be most strongly recommended, as it has all the qualities necessary for a good specimen. With the exception of Jardin des Plantes, all the foregoing will answer for standards, and can be well recommended for that purpose. In addition to the above-mentioned varieties, Hetty Barker, pearly-white; Venus, lilac-peach; Dr. Sharp, crimson-red; Lady Talfourd, pinkish-rose; Miss Hope, pink; Lord Derby, bright red; Mrs. Halliburton, creamy-white; Annie Salter, soft yellow; Hermione, white, tipped with faint pink; Pink Perfection, delicate pink; Orange Annie Salter, orange; are all kinds that can be strongly recommended for dwarf specimens and standards.

In the Pompone class, La Vogne, bright gold, is very effective; when developing itself, it has bright red tips, which give it a striking appearance. This is one of the best of its class, and one which should be grown in the most limited collection, as should also Madlle. Marthe, pure white; President (sometimes called President Decaisne), reddish-rose; Mr. Astie, yellow (Anemone), one of the very best, both in habit and flower; St. Michael, bright yellow, an old variety much neglected of late, but now beginning to be appreciated as it should be, being one of the very best and freest in its class. These have all rather large flowers, and should be disbudded to be seen to the best advantage. They are, without doubt, the very best Pompones in existence. Antonius, bright gold, is likewise very fine. I should have included this variety among the foregoing, but it is somewhat weak in the neck, a quality condemned by some, although others prefer seeing it, as they consider that it gives the bloom a natural appearance; but even this weakness can be obviated by twisting some wire round the stalk. Calliope, red-brown, is a kind both novel and striking, although rather sparse as regards foliage; Salamon, cherry-red, is rather stubborn in respect to training, but is desirable on account of its fragrance; Bob is an old, rather shy, blooming kind, a fault compensated for in some measure by its beautiful foliage and colour; Astrea, an Anemone variety, has when in bloom a fine appearance; Mrs. Hutt, chestnut-red, is well worth growing on account of the variety which it affords. This and one called St. Thais are much alike; Trophée, silvery rose, is not so much grown as it deserves to be, for it is certainly one of the most elegant Pompones in cultivation. It is not quite so large as some of the foregoing, but this is amply compensated for by its good qualities; La Sultana, rose colour, is another of the neglected sorts, but one which can be recommended. The varieties of Cedo Nulli, white, lilac, and golden varieties, are still indispensable, especially for beginners, being easy to grow, and never failing to bloom satisfactorily. For small plants, Bijou de l'Horticulture, General Canrobert, Louisa, Miss Julia, Model of Perfection, Rose d'Amour, and the White and Rose Trevenna, will be found of service.

As regards cut blooms, I propose to treat them as if making a selection for the most experienced grower, but will mark those that I recommend for beginners thus *. My reason for so doing is that many of our best flowers belong to what is termed the Queen section, *i.e.*, those having very long petals, which to the novice would be found somewhat embarrassing; the varieties marked will be those that incurve perfectly without aid. Queen of England, blush, its sport, known as Golden Queen of England, and its synonym, Emily Dale, I cannot recommend, as they are not to be depended upon; Alfred Salter, delicate pink; Empress of India, pure white (synonyms, Lady St. Clair and Mrs. Cunningham); and Golden John Salter, rich clear golden amber. The foregoing flowers are characterised by length and breadth of petal, perfection of build, and for requiring vigorous treatment to have them fit for exhibition; but, when blooms of good quality are staged, they are so striking as to be worth all the trouble required to obtain them. Jardin des Plantes,* yellow, is one of the best of its class, and one which can be depended upon; it makes a striking exhibition flower. John Salter, very fine in build of flower and breadth of petal, requires vigorous treatment; White Globe, pearly-white, has good flowers, but unfortunately they do not last; Prince Alfred,* a rosy-red, is one of the most reliable blooms we have; Princess of Wales, pearly-white with pinkish shade, when well grown, is a grand flower, but apt to come somewhat flat; even then, however, it is a fine flower, but when the centre is well elevated it is almost without a rival—its synonym is Beauty of St. John's Wood; Isabella Bott, pearly-white, is somewhat in the way of the former, but not quite so shaded; Empress Eugenie, rosy-lilac, is a very chaste and grand flower when well grown, but one with which the beginner will find some difficulty, from the fact of its centre being overcrowded; therefore, when about half grown the centre petals should be pinched out with the finger and thumb so as to induce it to throw out large outside petals, and, thus treated, it makes one of the best and handsomest flowers. Cherub,* dull amber, suffused with pinkish shade, is a very fine conical flower of large size and perfection; Mrs. Brunlees,* red, tipped with gold, is a fine flower, and very telling on account of its high colour; Prince of Wales, purplish-red, is very distinct in colour, and occasionally somewhat flat, but a flower to be depended upon, and one which is indispensable in a collection. This flower is all the better if hung down during development, as the back petals are so very long that the weight of the bloom causes them to fall down, giving it a somewhat ragged appearance; but I advise all to grow it. Rev. J. Dix, red, with glow of peach, centre shading off to orange, is a very nice flower, but unless grown well, it shows a badly notched petal—a fault that would condemn it on an exhibition table; if grown well, however, the edge of the petal is as smooth as that of any variety grown, and then it is a gem. Princess Teck,* an immense white kind, full of quality, possesses all the points necessary for an exhibition flower, and is one that I can most strongly recommend; also Hero of Stoke Newington, lively pink, a sport from it; Lord Derby,* bright crimson-purple, one of the most constant and perfectly incurving flowers; Mrs. George Rundle,* pure white, one of the finest of decorative Chrysanthemums, and one which can be strongly recommended. Its straw-colour sport, Mr. George Glenny,* is equally to be commended. Lady Hardinge,* bright silvery rose, is a grand and striking flower, which even the smallest collection should contain; Golden Eagle,* Indian red and orange, is a very constant flower, broad and blunt in the petal, and perfectly incurved in the way of General Slade,* which is another of the same shade of colour, and both are very useful varieties for beginners. Nil Desperandum,* dark red, is very constant and one of the best; Golden Dr. Brock,* clear primrose-yellow, a very fine (although somewhat flat) flower, one of the prettiest and most delicate, and can be strongly recommended. Pink Perfection,* rich rose; this is a very beautiful flower, and one possessing a good warm colour, and, in addition to its merits as a show flower, is very useful for conservatory decoration, as it possesses the most handsome foliage of the whole class to which it belongs; its synonym is Miss Mary Morgan. Barbara, orange amber, is a very plump conical flower, but apt to become notched in the petal; the best way to obviate this is vigorous treatment. It is a kind with which we cannot dispense, as its colour is so striking. Plutus, dull amber, a remarkably fine built medium-sized flower, incurving perfectly, and not difficult to manage; Antonelli,* orange shaded, with a tinge of salmon, is one of the best and most constant flowers we have, and one very dwarf in habit; its blooms are not quite so large as those of some, but they are perfection as regards shape and finish, thus fully compensating for lack of size; Princess Beatrice,* rich rosy-pink, is very distinct on account of its long and thin-clawed petal; it is very conical, of the best build, and generally to be depended upon, apt to make slender or weak growth, and requires a little coaxing to bring the flower to perfection; Abba Passaglia,* amber, is a very constant flower, finely incurved, and of easy growth; Beethoven, and its synonym, St. Patrick, are certainly very distinct in colour, but nothing can compensate for its notched petal, and all the cultural skill hitherto has not been able to eradicate it; if not fit for exhibition, I would recommend a few plants of it to be grown for its distinctive colour; but never, if possible, put it on a show board. Enamel, blush, is a very nice incurved flower, of perfect build and appearance—not to be depended upon, but when obtained in good condition it is worth all the trouble taken with it. Venus,* lilac, is one of the most constant and superb medium-sized flowers which we have, and I can strongly commend it to beginners; its colour is very clear, and the flower lasts a long time in perfection—a very desirable quality. Novelty, blush, a large conical flower, wants good cultivation to induce it to attain perfection; Eve,* sulphur white, and Mrs. Halliburton,* creamy white, are very similar in style, although perfectly distinct in colour; they must be grown in the strongest possible manner, and are to be classed as two of the most beautiful and chaste varieties in cultivation; I cannot too strongly impress upon growers the necessity of having these flowers. I have, perhaps, said enough with regard to exhibition flowers, but still there are many other valuable sorts that must not be overlooked, such as Sam Weller, Aureum multiflorum,* Lady Slade,* General Bainbrigge, *White Venus,* Orange Perfection, Mr. Gladstone, fine chestnut red, very distinct from every other kind in cultivation; Guernsey Nugget,* primrose-yellow, very large, but insufficient as to quality for a really first-class board of flowers; Beverley,* and its sport Golden Beverley,* much recommended; Oliver Cromwell,* and its synonym, Mr. Evans, chestnut red; Dr. Brock, George Peabody, Gloria Mundi,* Iona, Jenny Lind, Lady Russell, Laurinda (a grand purple flower), and Princess Mary, are all good.

A few of the best of the large-flowering Anemone Chrysanthemums are as follows, viz., Lady Margaret, white; Empress, clear lilac; Prince of Anemones, reddish lilac, one of the most constant; King of Anemones, cherry-red, very distinct; Madame Goderau, or its synonym, Geo. Hock, white; Louis Bonamy, rosy-lilac; Acquisition, reddish-lilac, with yellow centre, very fine; Gluck, a very fine and bright yellow, recommended as one of the best; marginatum, blush, with rose centre, good; Princess Louise, somewhat in the way of Prince of Anemones, good; Sunflower, sulphur, very distinct; St. Margaret, brassy-amber; and Mrs. Pethers, rose, good. The foregoing will be sufficient for any ordinary collection (although there are many others very fine), as most schedules allow duplicates to be shown on a board of twelve. The beginner will be able to manage all the foregoing, as well as those included in the next section, which consists of the class known as Anemone Pompones. They are kinds that can be specially commended for decorative purposes, as they are very easy to grow; they may be successfully treated in 24-in. sized pots, using the compost recommended for large-flowering varieties. They may be stopped once or even twice with satisfactory results. The following are among the best, viz., Rose Marguerite, rose, very large and fine; Regulus, cinnamon brown, a kind with a remarkably fine disc, and very even guard petal; Mr. Astie, pale yellow, one of the most perfect flowers in cultivation; Antonius, bright gold, rather wanting in fulness of guard petals, a fault, however, amply compensated for by its superbly quilled centre; Astrea, silvery rose, a very beautiful and chaste flower; Astarte, brassy-amber, very distinct and beautiful; Perle, deep rose, a very large and good flower; Zobeide, light rose, one of the best; Miss Nightingale, white guard petals, with gold centre, very fine; Madame Montels, paper white, with gold centre, one of the very best, and one which should be in the most select collection; Jean Hatchette, very late, often blooming in December and January, the largest of the section, a very massive flower, recommended as being perfect; Firefly, rather small, but very striking, in consequence of its bright scarlet and gold centre; Dick Turpin, magenta and gold, and very pretty, but too small for exhibition; and Marie Stuart, very chaste, but wanting somewhat in fulness, otherwise the colours (bluish-lilac and pale yellow) make it very distinct. The above will be sufficient, unless a very large collection is required, although of course it does not embrace all the varieties that may be considered good. Some of the Anemone kinds have the habit of developing ray petals among the centre; if this occurs they can be easily removed with the finger and thumb.

Anemone-flowered Chrysanthemum.

To make the series of selections complete, I append a few flowers known as reflexed, *i.e.*, flowers showing the inside of the petals. The colours of these varieties are much more brilliant than those of the incurved; but, of course, they lack the high finish of that section. They are very useful for conservatory decoration, and much to be desired. Chevalier Domage, bright gold, undoubtedly the finest coloured Chrysanthemum in cultivation; Dr. Sharpe, crimson red, also very fine colour; Julie Lagravere and Progne, velvety red, both very fine; Annie Salter, clear yellow, when grown well a perfect gem; Cassy, red suffused with peach; Christine, blush; Felicity, a good cream-coloured flower; Orange Annie Salter, a sport from Annie Salter, and one possessing all the good qualities of that desirable variety.

CULTURE OF ACHIMENES.

Many of the present race of Achimenes are garden hybrids, the result of crossing the different species introduced from Jamaica and South America. Achimenes have many properties that commend them to the general cultivator, amongst which are the ease with which they may be grown, their long-continued blooming, and also their ability to bear when in flower a considerably lower temperature than that of a stove; their suitability for conservatory decoration during the summer season, when the majority of plants have ceased flowering, makes them valuable for using in that way. They rest through the winter, during which they should be kept in dry material, either sand or soil, and may be put away anywhere in a dry place where the temperature does not fall below 50°; in one much lower than this they are not safe for any length of time, as, if kept too cold, they decay. Although, as I have said, they last in flower for a considerable period, still it is well to start them into growth at different times, so as to have a succession. If some be required early, say in June, a portion should be started about the end of February, and a second lot, say in a month or five weeks afterwards. Prepare some ordinary seed-pans, proportionate in size to the quantity of each variety to be grown, put in the bottom of them a few bits of crocks, and on these place the soil; that for starting the roots in should be of a light character. They will thrive in either peat or loam, mixed with leaf-mould and rotten manure, to which add sand according to the description of soil used. As these pans are merely used for starting them into growth, the soil, as I have already said, should be of a very light character, so that they may be moved from it without injuring the young roots, a circumstance that will occur if material of an adhesive nature be employed. If peat of a fibrous description be used, add one-fifth of leaf-mould; if loam, put an equal quantity of leaf-mould; fill the pans two-thirds of their depth with the soil, then place the roots 1 inch asunder evenly upon it, and over them put 1 inch of soil, which should be in a medium condition betwixt wet and dry. Place the pans at the coolest end of a stove; and if this will afford them a night temperature of 65°, do not give any water until the roots have commenced to grow, unless the soil has obviously got too dry, or they may rot. As soon as the shoots make their appearance above ground, set the pans as near the light as possible. If there be a shelf overhead close to the glass, that is the best position in which they can be placed. Do not keep them in a dark situation, or they will become drawn and weak, a condition that spoils them. When the young shoots are about 3 in. in length they should be moved into their flowering pots, and now it must be determined what sized plants are required. They may be placed in 7-in. or 8-in. pots, or in such as are up to 12 in. or 14 in. in diameter, according to the purpose for which they are wanted. A medium size in most cases will be the most useful; drain the pots well, add to the peat or loam, whichever they are to be grown in, a moderate quantity of rotten manure and leaf-mould and a sprinkling of sand; press it moderately firm, and fill the pots up to within 2 in. of the rim; then put in the plants about 2 in. apart, and place an inch of soil over the roots, pressing it slightly down; re-place them as before in a light situation. As the days get longer the temperature may be increased 5° in the night, and proportionately higher in the day, giving a slight shade in very bright weather, with air in the middle of the day. As growth advances, a neat stick, proportionate in length to the strength of the variety, should be put to each, to which let it be tied so as to make the whole shapely. As the soil becomes filled with roots a plentiful supply of water should be given, and the plants should be freely syringed overhead every afternoon. When the flowers are fully formed, and before they begin to open, if intended that the plants should be moved to a cooler house when in bloom, they ought to be gradually inured to the change by placing them where they will get more air, with, if possible, a little lower temperature, without subjecting them to too great a change all at once, as, if checked, they sometimes do not open their flowers freely. When in bloom, do not let them suffer from want of water, or the flowering will be soon over. When done blooming, set them in the corner of a house where they will be kept moderately warm, and supply them regularly with water, as, if neglected, either by a deficiency of this or by being set where they are too cold, they form very poor roots for the ensuing year. Attend to them in this way until the tops gradually die down, when the roots may be either allowed to remain in the ball of dry earth by setting the pots in a place with a suitable temperature, as already recommended, or they may be shaken out and put in paper bags in a little dry sand, so as to keep the air from them.

Achimenes make excellent basket plants for suspending in conservatories or similar places. When wanted for use in this way, the baskets should be made of galvanised iron, proportionate in size to the place they are intended to occupy. They should be first lined with 2 in. of clean Moss, upon which put the same depth of crocks or broken charcoal—the latter is much the lightest—fill up with soil, as in the case of pots, and plant similarly. When necessary, the outside shoots may be tied to sticks in a horizontal position over the sides of the baskets, the inner ones being tied so as to furnish the upper surface, and make the whole shapely. Managed in this way, they are very effective. Plants for successional flowering require treating similarly in every way, except starting into growth, as already said, somewhat later. Any variety that happens to be scarce may be increased readily from cuttings made from the young shoots in lengths of two or three joints, cutting them at a joint to form the base; insert them in pots or pans filled with half peat and sand, place them in heat, keep them moist, and cover them with a propagating glass. The following are all good kinds, viz.:—Ambroise Verschaffelt, a fine white sort, with the centre marked with dark rays; Aurora, scarlet, with a yellow eye; longiflora alba, white, slightly marked in the centre; longiflora major, a very fine blue sort; Mauve Queen, a very fine large-flowered kind; Rose Queen, purple and rose, with yellow throat, very compact in habit, and a profuse bloomer; Pink Perfection, magenta, shaded with violet, carmine eye; Williamsii, vivid scarlet; Stella, magenta, spotted with carmine, orange eye; Firefly, deep carmine, spotted with crimson, eye yellow. Achimenes are not so subject to insects as many occupants of the stove, although mealy bug will live upon them, and, when once they get affected with this pest, there is not much chance of removing it in any way but with a small brush and sponge, as the nature of the plants will not permit the use of any insecticide that will kill the insects. They are also liable to the attacks of red spider, which must be guarded against by a diligent use of the syringe.

T. Baines.

A Beautiful Greenhouse Climber.—I have just been gratified by the sight of a very lovely house of delicate bloom afforded by a plant which every one who loves a fine greenhouse climber should grow—Clematis indivisa lobata. It was planted out in a border, and had overrun the roof, and bore (on March 13) the most profuse crop of blossoms I have ever seen on a climbing plant. The flowers are pure white, and have a brush of delicate stamens in the centre. Outside, and at a distance, the house seemed full of Paris Daisy in its densest bloom, but, on entering the house a profusion of flowers was seen below as well as above the foliage. This Clematis is not one having large saucer-shaped blossoms, but it more than makes up for this by the purity of its flowers and a habit of rare grace. The plant to which I allude is now in flower in a cool house at Bolesworth Castle, near Broxton, in Cheshire.—V.

Bedding Plants in Moss.—The quantity of bedding plants now required render the potting off, as formerly, of each individual plant out of the question, and thousands, more especially Geraniums, are never put in either pots or boxes—the cuttings being inserted about 2 in. apart in the spaces occupied by Melons and Cucumbers in pits and houses, and about this time lifted and tied up in Moss with a handful of soil, after which they are set on the beds again and kept moist until thoroughly established, when they are hardened off under any spare lights or movable covering, and are in better condition for starting into growth than those in either pots or boxes. If lifted in autumn for preserving through the winter, the ball of Moss will be found quite perfect, and if set closely together in a cool house, with a little soil shaken amongst them, they will make excellent plants the second season.—J. G.

The Polyanthus in the Greenhouse.—There are few plants more useful and showy when grown in pots for the spring decoration of the table than the Polyanthus, at the same time requiring so little trouble and attention. I find the easiest and most satisfactory way of growing it for the greenhouse is to sow the seed of a good strain in gentle heat any time from the middle of March to the end of April; the earlier sowing will of course produce the strongest plants, but the result will be satisfactory from the later sowing if the plants be properly attended to. When the seedlings are sufficiently strong prick off a portion, 12 in. apart each way, in rich soil on a north border. Should the weather be very dry, an occasional soaking of water will benefit them. The best should be taken up and potted in 6-in. or 7-in. pots towards the end of October, and plunged over the rim in ashes in a cold frame for the winter. Pick off the remainder of the seedlings in thumb pots, and, when strong enough, re-pot into 4-in. or 5-in. pots, using rich soil, then plunge them in ashes, where they should remain till there is danger of hard frost, under which circumstances, like those growing in the open ground, plunge them in a cold frame. I find the advantage of growing them as suggested, that those grown altogether in pots, being smaller and dwarfer plants, are more useful for the front of shelves or stages; the others will be stronger and more robust, and throw up their blooms higher and in greater profusion. Polyanthuses neither require, nor will they stand much forcing. Let me recommend anyone fond of our old-fashioned border flowers to give them a trial in pots.—J. E.

Nemophila insignis for Hanging Baskets.—In no way does this Nemophila appear to better advantage than when grown in a wire or other basket, and suspended from the roof of a greenhouse or conservatory during the spring months. It is scarcely eligible as a summer bedding plant (although its habit and colour are all that could be desired) on account of its somewhat transient character during hot dry weather; but it is exceedingly effective as a spring flowering bedding plant, and when intended for this purpose it should be sown early in August, and the portion of plants required for indoor decoration should be potted into small pots about the end of September or early in October, and placed in a cold pit or frame. About the beginning of November they should be transferred to their flowering pots, which need not be larger than 5 or 6 in., and the soil used should consist of light turfy loam and about a fourth or fifth part of leaf-soil. The plants should then be placed upon a shelf near the glass in any ordinary greenhouse temperature. Thus treated they will generally begin to show flower about the middle of February, when they may be placed in wire baskets and have their pots neatly surrounded with green Moss and suspended from the roof of a light conservatory or other structure. If well supplied with water they will soon become very ornamental, and will continue to flower until the beginning of May or longer if desired, producing in profusion their beautiful pale blue white-eyed blooms, larger and in every way in better condition than they generally do in the open air. Other varieties of Nemophila may also be grown in a similar manner and with equally good results.—P. Grieve, *Culford Hall, Bury St. Edmunds.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Destroying Earth-worms in Pots.—Referring to Mr. Radclyffe's recent introduction to keep pots free from worms, a writer in "Moore's Rural," says—We use hot water to kill earth-worms—as hot as can be endured by the hand. This kills them instantly, and we have never known it to injure the roots of the most delicate plants. The experiment is easily tried.

Forcing Irises.—"R. H. B." (see p. 246) speaks of the Persian Iris as the only one that will bear forcing. Has he tried I. reticulata and I. tuberosa? I potted I. reticulata, I. persica, and Hyacinths and other Dutch bulbs, at the same time, and I. reticulata was the first to flower by a fortnight, and it produced finer flowers than those usually found on it out-of-doors. Like I. persica, it is very sweetly scented. I. tuberosa also forces well, and flowers freely, but it is more singular than beautiful.—R. A. O., *Fulham.*

Propagating Alternantheras.—The most expeditious way of striking a large stock of these is to put about 2 in. of fine soil covered with sand into the bottom of ordinary cutting boxes, and insert the cuttings as thickly as possible, with a large square of glass over the top. In a house or pit, such as that devoted to Pines, or over the flue or hot-water pipes of any forcing structure, they strike root in a few days, if shaded during bright sunshine. As soon as rooted, the glass should be removed by degrees, and the plants gradually hardened off.—J. Groom.

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FORESTRY AND POETRY.[*]

The grandeur and beauty of forest trees have attracted the admiration of poets in all ages, and some of their most striking lines have been inspired by trees, from the Cedars of Lebanon to our own giant oaks of Sherwood, Windsor, and Arden. It is well that foresters and horticulturists in general should know and appreciate the noble thoughts which poetic genius has allied with the objects of their study and culture. Such knowledge must necessarily tend to elevate the character of their pursuits, even in their own estimation, when feeling that they share the appreciation of their noble calling with the most highly-gifted minds of a long series of ages. No landscape-gardener could, for instance, read many of the exquisite lines in Goethe's "Love as a Landscape-Painter" without becoming prouder of his own work, feeling as he would that he is a maker of real landscapes, which ought, if he combine sufficiently skill and genius, to surpass the very best that can be done with pigments on canvas. It was, therefore, a happy thought, in so far as the horticulturist is concerned, to gather together in a chronologically arranged series, a selection from the poets of all ages of passages which have immediate reference to tree-grandeur, to general woodland scenery, or to ancient methods of forest, orchard, or garden culture. Something after this kind is the selection furnished in a volume entitled, "Forest and Woodland Scenery, as described in Ancient and Modern Poets," by William Menzies, &c. The selections, which are acknowledged to be made from well-known translations, if not always the very best that might have been chosen, form a very interesting series of passages bearing upon this subject, as may be seen by the following citations. Some of the most striking, if not the earliest poetic, allusions to the impressive grandeur of trees occur in Biblical literature; and the magnificence of the Cedar is, above all other trees, dwelt upon with the greatest admiration by the Hebrew poets. From the earliest time these lordly trees were chosen as emblems of greatness, beauty, and majesty; and when the wisdom of Solomon was extolled by his contemporaries, it was said that "he spake of trees, from the Cedar tree that is in Lebanon, even unto the Hyssop that springeth out of the wall;" and that his knowledge of their culture was as wide is proved by the recent researches of Ewold, who informs us that he made gardens, vineyards, and pleasant parks around Jerusalem. Our space does not admit of citing even a few of the various fine passages referring to the Cedar which occur in the Bible, but those who in reading them feel their beauty may satisfy themselves of their appropriateness and accuracy by comparison with some of the grand specimens of the trees themselves to be found in English parks and gardens, the oldest of which is in the garden of the old palace at Enfield, which is now 200 years old, and 16 ft. in circumference.

Homer, the greatest of the poets of classical antiquity, has bequeathed to us many magnificent lines, in which in a few terse but grand Greek words, he describes the majesty of the giants of the forest with unerring accuracy and force. How finely, for instance, in the Iliad, he converts into a noble simile of the meeting of Greek and Trojan in the shock of battle, the storm-wind that

Howls in the branches of the lofty Oaks.

And how accurate is his knowledge of the habit and most favourite habitat of the Poplar shown to be, when he refers to

"—— some tall Poplar, grown in marshy mead,
Smooth-stemmed, with boughs up-springing toward the head."[†]

While the Odyssey contains more frequent and more extended passages, descriptive of forest and woodland scenes. His near contemporary, Hesiod, in the most ancient of known poems, which treat especially of forestry and agriculture, has combined instructions to the forester, the shepherd, and the ploughman, with a poetic grandeur of style in the treatment of the subject that rises, not unfrequently, to rivalry with the greater Homer himself.

The eminent Greek tragedians, Æschylus and Sophocles, have left us in their great dramas magnificent glimpses of what they might have done in Nature-painting had the character of their works permitted. In the "Antigone," of Sophocles, we get, probably, the origin of the well-known fable of the Reed and the Oak:

Thou see'st the trees that bend before the storm
Save their last twigs, while those that will not yield,
Perish with root and branch;

and how sweetly he describes a flowery dell in one of the Choruses of Œdipus at Colonus:

And there, beneath the gentle dews of Heaven,
The fair Narcissus, with its clustered bells,
Blooms ever, day by day—
Time-honoured wreath of mighty goddesses;
And the bright Crocus, with its leaf of gold.[*]

Theocritus, Apollonius Rhodius, and other Greek poets have left many passages descriptive of natural scenery other than those cited by the compiler of the present selection, and similar passages of great beauty might be selected from the works of other Greek poets not noticed by Mr. Menzies, who, after Apollonius Rhodius, passes at once to the Latin poets.

Among Latin poets, the first cited in chronological order is Lucretius, whose great poem is full of noble passages, in which he attempts to analyze the forces of Nature, and solve those problems respecting animal and vegetable life, which still remain as mysteries of our philosophy; though Mr. Menzies informs us that the puzzled Lucretius might have found his difficulties solved if he had been fortunate enough to read a few verses in chapters iv. and v. of Esdras. The Georgics of Virgil are so full of fine descriptions of natural objects, and his descriptions of the practices of the agriculture, forestry, and the horticulture of his time are so very complete and numerous, and, notwithstanding certain superstitions, so accurate, that they should be carefully read as a whole by every educated horticulturist; while in the Æneid picturesque descriptions of forest scenery occur very frequently, as when Æneas, for instance, in his visit to Hades, saw, in "the realms of tranquil bliss," the transfigured Shades reclining in the midst of groves of fragrant Bay trees, and wandering among

Green spaces folded in with trees,
A Paradise of pleasances.

Next comes Horace, with his passionate love of rustic scenery, so felicitously described in a thousand graceful and fanciful passages, as when he tells us of his simple ambitions in the following charming couplet:

This used to be my wish—a bit of land,
A house and garden with a spring at hand,
And just a little wood—the gods have crown'd
My humble vows: I prosper and abound.

A few selections, not quite the best that might have been selected are then given from Ovid and Lucan, and the compiler next passes to the Italian and German poets—Dante, Ariosto, and Tasso being the only Italians whose works are quoted, while in the German galaxy only Goëthe and Schiller are laid under contribution. The English series of citations commences with Chaucer, followed by Shakespeare with his glorious gift of that exquisite power of seeing and appreciating Nature which has never been equalled. Milton, Dryden, and Thompson succeed, from whose works some choice morceaux have been obtained, while Pope in his "Windsor Forest" is shown descanting like a trained landscape gardener, and describing like a great poet. Gray and his famous "Elegy," Cowper with his love of trees and flowers ever floating through the network of the celebrated "Task" and other poems, and Macpherson with the grand touches of Nature-painting in "Ossian," are next laid under contribution; and then comes Burns with his appeal to his master, the Duke of Athol—

Would then my noble master please
To grant my highest wishes,
He'll shade my banks wi' tow'ring trees
And bonnie spreading bushes.

The volume closes with some attractive snatches germane to the subject from poets of our own time, Wordsworth, Scott, Byron, Longfellow, and Tennyson, among which Byron's couplet to the Cedar—

Dark tree, still sad when other's grief is fled,
The only constant mourner o'er the dead.

And Tennyson's felicitous picture in word painting—

In the midst
A Cedar spreads his dark green layers of shade.

The general selection is very acceptable as far as it goes, in spite of numerous clerical errors, such as "phantacies" for phantasies, &c., &c. But what shall be said of the illustrations? The most far-stretching amenity of a reviewer cannot find words of praise. As the works of amateurs, they might fairly be considered in the light of praiseworthy productions of an elegant leisure by a circle of admiring friends; but an appeal to the public is a widely different kind of ordeal. Our great landscape painters, from Constable to Vicat Cole and Millais, and many others, have presented us with such noble examples of tree study that nothing which falls very far below the high standard of excellence to which the public taste is now raised can be even silently tolerated, especially in an expensively got-up volume on the poetry of trees and woodland scenery, professing to be illustrated chiefly from the magnificent forest scenery of the royal domain of Windsor, which contains some of the grandest trees in Europe. Only to particularise a few, let us take first the representation of the grand tree known as "Queen Victoria's Review Oak." There is in this attempt not a single truly characteristic feature of the tree present. Neither the sturdy and massive grandeur of the trunk, nor the infinite ramifications of the great arms, nor the gnarled intricacies of the secondary branches are there. The peculiar kind of oaken majesty to be found in no other forest tree is not there, either in the stately grandeur of the general form, or in any of the details, while the execution is in every respect faulty, the touches representing foliage being as broad and heavy in the uppermost branchlets as in the lower portions of the tree, while the general handling of the foliage is of that conventional, flabby kind that was taught in ladies' schools when our grandmothers were little girls. In short, the style both of this and, indeed, the whole of the illustrations, is feeble and old-fashioned to an inconceivable degree in an expensively got-up volume in the present day. The weakness of treatment of the "Cedar at Maturity," at Belvedere Wood, is equally conspicuous, and seems like a painful bathos in face of the grand quotation from Ezekiel. Yet any one knowing the character of a Cedar at maturity, and having seen the reality at Oatlands, Virginia Water, or elsewhere, may imagine that the features, so feebly indicated in the present illustration, might actually be such as those so strikingly portrayed by the Hebrew prophet, if the portraiture had been placed in abler hands. How completely is the grandeur of a solitary Poplar missed by the limner in the representation of the tree at Upton. The Plane at Bagshot is a still more conspicuous failure. In the treatment of the venerable ruins of the most ancient of the Windsor Oaks, the washy poverty of handling is still more conspicuous. Any one who has seen Henshaw's magnificent portraiture (now in the Birmingham Art Gallery) of one of the grand old Oaks of the forest of Arden, a mighty ruin, treated with the firm crispness of an artist hand, could not, in a volume of so much pretension as the present one, look with common patience at the representation of "William the Conqueror's Oak," at Cranbourne, or that of the old Oak at the Prince Consort's Gate in Windsor forest. The grove of Yew trees in Belvedere wood is another sad failure. Neither in colour, appreciation of characteristic form, nor sombre grandeur and depth of effect, is the subject realised in the slightest degree; and the quotation from Wordsworth—"Beneath whose sable roof . . . ghastly shapes might meet at noontide"—renders the shortcomings of the yellowy-brown washy picture still more lamentable. The magnificent trees and groves of Windsor have yet to be described and illustrated, a task which can only be fitly executed by a pen-power as incisive as that of a Ruskin, and a pencil wielded by a hand equal to that of a Millais, a Cole, or a Graham. In conclusion it may be said of this handsome volume that it is acceptable as a whole, despite its shortcomings. It points the way to the subject as one worthy of our greatest artists, and also to a more abundant selection from the finest things that poets in all ages have said of mountain and woodland trees, in which passages from our garden poets, such as Mason and many others, should not be omitted any more than many from modern French writers, such as Delille and Lamartine, nor from the modern poets of Italy, nor even from those of Spain and Portugal both mediæval and modern, for there are as fine descriptions of natural scenery in the "Lusiad" as in the "Inferno" or the "Gerusalemma."

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[*] "Forest Trees and Woodland Scenery, as described in Ancient and Modern Poets." By William Menzies. London: Longmans, Green, and Co., 1875.

[†] Lord Derby's Translation.

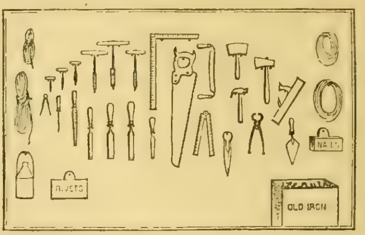
[*] Plumtree's Translation.

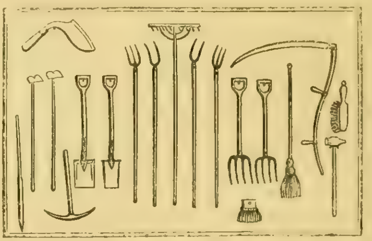
H. N. H.

An Ancient American Elm.—A famous Elm tree, the pride of Boston Common, which is in its turn the pride of Boston, has just been blown down. This tree was one of the pet objects of the town. There have been many controversies about its age, but all the disputants admitted that it was very old. It figured upon the oldest map of the town, which was engraved in 1722, and there are those who hold that it was growing before the arrival of the first settlers in 1630. It was affectionately spoken of as "the oldest inhabitant of Boston." Sceptics declared that it was planted by a Capt. Henchman in 1670 to shelter the Ancient and Honourable Artillery Company which he commanded. This legend, however, was exploded by Dr. Warren, who printed a monograph of the Great Tree, and proved that it must have been 100 years old in 1722. 190 rings were counted in a branch broken off in 1860, which must have been considerably younger than the tree itself. It belonged to a species known as the "American or White Elm." Its first catastrophe was in the summer of 1832, when a gale partially broke off four of its larger limbs. They were, however, restored by careful surgery, bolted into their original places, and are said to have grown back into the tree again. In June, 1860, it lost a limb measuring 42 in. in circumference. Still it continued to grow. According to the latest measurement in 1860 the following were its proportions:—Girth at the ground, 24 ft.; at 3 ft. above it was 18¼ ft.; at 5 ft. above, 16½ ft.

THE TOOL ROOM.

A place for everything, and everything in its place, will save many hours of searching, many weary steps, and much vexation, every year. The tools should not only be in the room, but everyone in its place, where the hand may be always laid on it in a moment. For this purpose they should be hung up against the wall, and be neatly arranged. Nearly every tool can be hung on a spike or pin, or between two large nails. If hung perpendicularly, they will occupy less room, and may be quickly taken down and replaced. Fig. 1 shows the manner in which the smaller tools may be thus arranged; and Fig. 2 exhibits the larger tools hung on the opposite wall of the same room. In order that each tool may be always in its place, the plan devised by Mr. Townsend Sharpless, of Philadelphia, is the best. Hang each tool in its position; then draw its outline accurately on the board wall with pencil or chalk; then, with a brush dipped in some dark coloured paint, make a distinct representation of the shape of the tool. These outlines will not only show where the tool should be put, but demonstrate at once if any have been left out of place. The consciousness that there is such a tell-tale in the tool-room, will stimulate any careless labourer to return everything which he takes out.—"Rural Affairs."





THE SOUTH KENSINGTON BREAKDOWN.

The fact that certain notorious enterprises at South Kensington, which had their origin in the surplus of the Great Exhibition of 1851, are at the present moment in a condition of hopeless financial collapse, would not be in itself a matter of much consequence, if it affected only those who are immediately interested in these unfortunate projects. It happens, however, that a large sum of public money has thus been grossly misapplied, and that the Royal Commissioners, who are to a certain extent responsible for this discreditable result, were appointed to act on behalf, not of private speculators, but of the community at large. It would seem, therefore, that the time has come when the Royal Commissioners should be called upon to render an account of the funds entrusted to them, and that the truth with regard to the various South Kensington Exhibitions should no longer be concealed with the connivance of the Government. The Duke of Edinburgh remarked the other day in reference to the Aquarium at Westminster, which has turned out to be merely a drinking-bar in disguise, that this precious institution was "a natural result" of the Prince Consort's benevolent projects; but those who have any genuine respect for the Prince's memory will probably hesitate to believe that he contemplated the results which have actually been produced, and will be disposed to think that the persons who are responsible for these results have formed a very imperfect appreciation of the objects which he had in view. It was arranged that the profits realized by the first Great Exhibition should be applied to promote the general advancement of science and art; but it appears that the greater part of the fund has been bestowed on such projects as the Horticultural Gardens and the Albert Hall, and no one can pretend that science or art has profited by such an application of the money. The Horticultural Society has long ago abandoned even the pretence of doing anything for horticulture in its scientific aspects, and the Gardens have become a mere pleasure-ground for the use of neighbouring residents. As for the Albert Hall, it has never served, or attempted to serve, any purpose beyond that of competing in the ordinary way with the other concert-rooms and music-halls which are kept up by private enterprise; and it is difficult to see why it should be supported out of public funds. At the present moment both the Horticultural Society and the proprietors of the Albert Hall have absorbed a large part of the Royal Commissioners' resources, and are making no return. Indeed the are both in such a desperate condition that they are endeavouring to break the bargains which were originally made with their subscribers and to compel the latter to pay over again for privileges which have become a wretched mockery. It seems that the Society is at such a low ebb that its Journal has been discontinued, and it has now to depend for a "medium of communication between the Fellows" on the charity of the newspapers. Moreover, the prize list has been cut down to a merely nominal amount. The last resource of this distinguished body is now, it would appear, to stake its fortunes on a skating-rink, which must be admitted to be a very curious method of promoting science and art.

Under these circumstances, it is evident, says the "Saturday Review," that the Horticultural Society and the Albert Hall are in possession of public property on false pretences. The Horticultural Society holds ground from the Royal Commissioners valued at more than £100,000, and it is now heavily in debt to the Commissioners for unpaid rent. The financial position of the Albert Hall is at present surrounded with greater mystery; but it is clear that it is financially in a very bad way, since it has avowed its design of asking parliamentary sanction for a plan of levying a new tax on the unfortunate victims who have already purchased useless boxes and stalls at a high figure. If these enterprises had been carried out by the private speculators who are at the bottom of them in their own names, they would no doubt have been wound up long ago, and it is only by trading in a despicable manner on a respected memory, and obtaining the use of public money on empty pretexts, that they have been enabled to prolong a scandalous existence. It is only just that, as far as possible, the public property which has thus been misapplied should be recovered for the use of the nation in some honest and respectable way, and that the cover of a Royal Commission should be stripped from institutions which would then be exposed in their true colours. Whatever may have been the original intention with which the South Kensington estate was taken up by the Commissioners, there can be no doubt that their management of it has practically taken the form of a mere building speculation. Whether it will prove to be for the public convenience that the natural history collections should be removed from the centre of town to this remote suburb remains to be seen; but it can readily be understood that the scheme of concentrating museums and pleasure grounds on this spot is highly acceptable to the owners of house property in the neighbourhood, and this is the only class which has profited by the large expenditure which, by a gross abuse of authority, has been diverted from the true objects to which it was dedicated. It would be interesting to know what form of science or art is supposed to have been promoted by the gimcrack mansions of South Kensington. In a town which grows so rapidly as London it is always a pity that any piece of open ground should be swallowed up, and there might be reason to regret the conversion of the Horticultural Gardens into streets and squares. It is clear, however, that, whatever is to happen, the Horticultural Society has forfeited its right to the continued possession of this property, by its flagrant abandonment of the purposes for which it was pretended to be established. Some arrangement might perhaps be made between the Commissioners and the householders of the district for a lease of the ground; but in any case public money ought not to be applied to purposes of merely local convenience. The National School of Music is another offshoot of the same rank soil as that which has nourished the other Fungi. It enjoys distinguished patronage, and bears the usual delusive trade mark of science and art; but it should not be forgotten that it practically involves an attack on an older institution which, in the face of many difficulties, has done service of the highest value in the cultivation of musical taste and skill, and which an attempt is now being made to supersede, in order to provide further accommodation for the omnivorous Cole family, and a platform for the display of pushing professionals and distinguished patrons in search of a popular reputation. There seems to be something in the atmosphere of this district which covers the institutions springing from its soil with a thick coating of parasitical incrustations. It is the great nursery ground of jobbery and humbug. From the early days of the Brompton Boilers a claptrap parade of enthusiasm for the promotion of science and art has been systematically kept up, with a view to diverting public money and patronage to this quarter for the benefit of an interested clique; and for the credit of public administration it is necessary that the abortive speculations which have resulted from this system should be cleared away. There might be no harm in such exhibitions if their character as commercial enterprises were candidly announced; but it is a scandal that such a system of mismanagement and imposture should be placed in any degree to the credit of public administration.

GARDENERS AND THE "SATURDAY REVIEW."

You have favoured us with a glimpse of what a writer in the "Saturday Review" thinks of us. From his stand-point it would appear that gardeners are the very essence of ignorance, conceit, and intolerance; men who require to be guided, on the one hand, like machines, and repressed and snubbed, on the other, as a social plague. Well, one can afford to disregard such a diatribe as that of which you have quoted only the mildest portions, but when we find editors of newspapers wholly devoted to gardening and gardeners sneering at us as a class of ignoramuses who do not know how to prune or train a tree, one week giving a portrait and autobiography of a notable member of our fraternity, and the next week publishing his name side by side with that of Dr. Kenealy in a mock committee of the Royal Horticultural Society, it is almost beyond the bounds of endurance. I have so often defended gardeners as a body from the cuffs of the latter class of writers, that I will pass them by on this occasion. I do not know where the reviewer has gained his knowledge of gardeners or his experience of their doings, but it is a pity that he does not make himself better acquainted with matters as they are in general, and not pick out exceptional cases. It cannot, I think, be disputed that I am capable of knowing as well, if not better than the "Saturday Reviewer" the position and relationship in which gardeners, as a class, stand to their employers and their gardens. Our reviewer joins lustily in the hue-and-cry against gardeners as having been the introducers of every vulgar fashion and feature that slur the fair face of Nature in gardens, and represent them as being the masters of their employers, doing just as they like with their gardens—and bedding-out seems to be their unpardonable sin. Now, it so happens that I am now serving my fourth employer, and probably no gardener ever enjoyed more liberty of action in four successive situations than I have done; yet it also happens that in not one of these situations would I have considered it wise or safe to have altered one feature of the garden, or made an innovation of any sort without an order or a very distinct and unreserved sanction from my employer. And, so far as my knowledge goes of the position of gardeners in general, and perhaps it is a knowledge of them equal to that of the "Saturday Reviewer's," my experience and practice in this respect is a *fac-simile* of that of ninety-nine gardeners out of every hundred, and I shrink not from stigmatising any gardener who should attempt a revolution in the style or features of a garden, or who would attempt to be dictatorial to his employer, as foolish and blind to his own interest, to say nothing of the violation of duty and respect both for himself and his employer. With regard to the power which bedding-out—as it is vulgarly called—has gained in gardens, I can give you an illustration of how it came about in one case, and I know it to be the type of many more. In the year 1858 I took charge of Archerfield Gardens. The grounds at the old Castle of Dirleton were then a chaos of shrubs, herbaceous, and bedding plants. One command from my employer was that it was to be remodelled and managed—as it was termed—the same as the beds at the Crystal Palace. What was my duty under a command of that sort? Unhesitating obedience. And during the autumn months, in a dry and glorious climate, when only the family resided, no other style of flower gardening or class of plants could possibly in that hot, dry soil have yielded a tithe of the pleasure from August to November which bedding plants did. Now, this was just the proprietor doing with his own as he liked, and I would ask, Who has any right to interfere with or remonstrate with him for so doing? Certainly not the gardener, and as certainly not any outsider. And I am of opinion that any gardener who attempts to dictate to his employer will very soon come, and ought to come, to grief. Hyde Park, the Crystal Palace, and other parks and palaces should more properly be saddled with the sin of overdoing bedding-out than private establishments. Another delusion under which our reviewer seems to labour is that gardeners object to their employers going into their gardens and picking flowers and fruits. Now speaking from experience, I never had an employer who once came into the garden and picked any flower or fruit beyond the most paltry thing without either telling me that he had done so, or leaving word to that effect with some one in charge. I consider it impossible for any of them to have supposed that I should have objected; nevertheless, I unhesitatingly affirm that no lady or gentleman properly so-called could, after due consideration, follow any other course than the one which I have named. Where there are more than two or three persons concerned, I hold that it is nothing but right that a gardener who is responsible for choice flowers and fruits should know who gathers them, but I do not believe that any gardener could object to any such wish or act of an employer; nevertheless, I would advise a different course. An employer may just as well allow some of his family to make free with his secretary's cash-box without liberty as to allow them to go and pick Peaches and Grapes, for which the gardener is held responsible, without a distinct arrangement and understanding. No doubt there are gardeners who do not know their duty or their interest, but it is unfair for any one to single out such and brand the whole class with ignorance and conceit. I will just say in conclusion that the "Saturday Reviewer" must be very unfortunate indeed if his make-believe gardener is one of the ninety-and-nine who is ignorant enough and conceited enough to think that if thwarting his employer and not doing all he can to meet his wishes, no matter what fashion these wishes take, he can hope to succeed. The sooner he discharges such a servant the better, and the fraternity he represents can very well afford to do without him. David Thomson.

Drumlanrig.

The "Saturday Review" writer's description of the conceit and ignorance of modern gardeners can only apply to a very small section of them, and very likely the only one of which he has any knowledge. As has been observed, "nobody, knowing anything of gardeners as a class, would have written the unwarrantable statements against them made by the writer of the article in question." He makes an unfortunate mistake in regard to the modern gardener's training. It is well known that most gardeners of note have served an apprenticeship in gardens in which the whole routine of gardening is learned by them. They then try to get into one of the large London or country nurseries, as the best places in which to acquire a knowledge of plant-growing before they take situations for themselves. Among other charges, one seems to be not keeping the pleasure-grounds in beauty all the year round, and another is not having the kitchen-garden well stocked with the necessary crops. Gardeners are likewise said to enforce the law that none of the family are to cut flowers or to touch the fruit, for their greatest ambition is to see their names ticketed as prize-winners at flower-shows. A thing of beauty is said by Keats to be a joy for ever, but gardeners are stated to hate Wild Primroses, Hyacinths, Honeysuckles, and Foxgloves, and to devote all their attention to bedding plants, and in arranging them in rows or patches. Perhaps the gravest charges brought against them are transplanting trees or plants in the hottest time of the day, gathering fruit when it is raining, and taking possession of every green thing, thus adding insult to injury if interfered with by their employers. This is the crowning climax of the writer's charges, and it makes one really wish he had never belonged to the "grand old gardener's" craft, to hear of the ignorance and misdeeds with which modern gardeners are now charged in the "Saturday Review." However, if the writer of the article in question should ever own a charming garden, I hope his success in teaching the intelligent labourer how to manage it will be duly recorded, so as to afford an example to us retrograding practicals. William Tillery.

Welbeck.

The correspondent of the "Saturday Review," who has taken gardens and gardeners in hand, evidently has a very limited knowledge of both. He summarily sets employers down as hopelessly imbecile, and as squandering their money in an aimless manner, whereas anyone conversant with "facts" knows that the writer has allowed his "imagination" to get the better of his judgment. He denounces gardeners as tyrannical and prosaic creatures, with no love or perception of the beautiful in Nature, and only seeking their own personal gratification. But we all know that those who are not naturally fond of their calling, and who do not make good use of their abilities, are seldom called upon to occupy places of trust; in fact, they cannot by any stretch of imagination be called "gardeners" at all. Some, as a matter of course, enter the profession who are totally unsuited for it, and who never acquire anything more than a superficial knowledge of their business, but gardening does not stand alone in this respect. The writer in the "Review" speaks of hardy fruit culture as if it were a thing that might be learned, like some fashionable accomplishment, in "six easy lessons," whereas those who have devoted whole lives to gardening will admit that there is always much to be learned even by the most experienced. The writer in question seems to think that any owner of a garden could succeed with the assistance of an intelligent labourer, and some one to do the pruning, but has he any knowledge as to when the pruning should be done? Some call cutting off the fore-right shoots in summer and a good thinning in winter—pruning, whereas successful cultivators find it to be a much more complicated operation, and one which should be done at various seasons, in order to suit the requirements of individual trees, and the circumstances under which they are placed. Gardeners are charged with converting the whole of the gardens under their care into experimental grounds, whereas their interest is to consult and carry out as successfully as possible the wishes of their employers. That gardens have degenerated of late years is contrary to fact, for, although the system of bedding-out may be too formal, there is a decided improvement visible when the form of beds admits of any latitude in other directions. The plan of giving prizes for stiffly-trained specimens at shows is the only reason why the practice is perpetuated, for gardeners, as a rule, do not train or tie any plant that looks better without such attention. Doubtless, it is possible to have a charming garden without a greenhouse, but, in order to have flowers, fruits, and vegetables out of their natural seasons, glass is necessary. J. Groom.

Henham.

I consider that the writer in the "Saturday Review" has done an injustice to every gardener in the country. On what grounds does he bring such charges against us, and why should he say that our gardens have degenerated, and our employers know nothing about flowers? "Gardeners," he says, "make no attempt to learn how to keep pleasure grounds in beauty all the year round, or the kitchen garden well stocked with the necessary crops." Twenty years' experience, both in England and in Ireland, enables me to give an emphatic denial to this statement. I defy him to find a gardener in the country who is not always pleased at being able to afford his employer an opportunity of making presents of fruits and flowers to his friends. Certainly we like to see our names on prize tickets at flower shows, but that is not our only ambition, nor is winning a prize, I apprehend, any sign of ignorance, especially a first prize. Neither do we waste our time on a few sticks of early Celery. The writer in question speaks of Azaleas the shape of haystacks, and covered with bloom, as being, according to gardeners, the perfection of art and beauty. Well, they are certainly effective, but, nevertheless, though not so strikingly showy, we can also admire a Cloth of Gold Rose, and we do not hate, but, on the contrary, admire and cultivate the different varieties of Primrose, and likewise respect the wild Hyacinths and the starry Windflowers. He may have seen some gardeners, so called, transplanting and watering in the hottest part of the day, and gathering fruit when it was raining; but they must, I imagine, have been half-gardener and half-footman. I would advise our would-be critic to visit some good gardens, and learn something more about a class of men with whom he does not at present seem to be well acquainted before he next writes about them in such disparaging terms. John Clarke.

Cork.

THE PAINT ROOT AND ITS CURIOUS EFFECTS ON PIGS.

Those who study the native plants of the Northern States, know as an exceedingly rare and local one, Lachnanthes tinctoria; the first or generic name means woolly flower; and the second, or specific name tinctoria, has reference to its dyeing or colouring properties. In some works Red Root is given as the common name of this plant, but as this same name is, in various parts of the country, applied to at least three other plants, it is preferable to accept that by which this is known in the Southern States, where it is most abundant, and call it Paint Root. In favourable localities its stem grows from, 2 to 3 ft. in height, the leaves, about half as long as the stem, are narrow, the lower ones clasping one another like those of an Iris; the flowers are in a dense cluster at the top of the stem, and being woolly without, and of a dingy yellow colour within, cannot be called showy. While the minute structure of the flowers is of interest to the botanist, we ("American Agriculturist") will not describe them further than to say that they are six-parted, and have three stamens and a single style. The plant belongs to the Blood-wort family, (Hæmodoraceæ), of which we have but few examples in this country, and among familiar plants it is most closely related to the Amaryllis family, to which the Jonquils, Narcissi, and others of our spring garden flowers belong. The Paint Root contains an orange-coloured juice in its stems, and

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> "This is an art
> Which does mend nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

WELL-GROWN CAMLLIAS.

WELL-GROWN Camellias are comparatively rare in this country, a circumstance the more remarkable inasmuch as, from the length of time the plant has been under cultivation, and its recognized decorative value, one would have thought that even the most minute detail respecting its management would have been familiar to every plant grower. This, however, does not appear to be the case. Collections here and there planted out are satisfactory; but specially good culture in pots or tubs is rarely met with. The best collection of Camellias that I ever saw in pots was at M. Chantin's place, near Paris; there several large houses were completely filled with specimens varying from 2 ft. to 6 ft. in height, and proportionately large in breadth. They were mostly pyramidal in shape, and well furnished to the rim of the pots with foliage of the very healthiest description. Camellias in this establishment were a speciality, and no pains or expense were spared to render the collection complete, both as respects variety and perfection of culture. One of the best single specimens with which I ever met was at the Paris Exhibition of 1867. It came from near Lago Maggiore, and was really a model of what a Camellia should be. It was a perfect pyramid, and, as near as I can recollect, was about 8 ft. in height, and about 5 ft. through. Larger plants I have seen, but never one so perfectly formed, and in such a high state of health. The Camellia, although one of the easiest plants to grow, dislikes forcing of any kind; and to this peculiarity I attribute in a great measure the want of success as regards the production of specimens. By forcing I mean an attempt to induce rapid growth by means of large shifts, rich composts, and stimulating manure-water. It is remarkable in what a small quantity of soil a Camellia will live, and even thrive, and the constant aim should be to secure a good head of foliage in a small pot. If this be secured at an early stage of growth, the afterwork will be comparatively easy. Overpotting, and the use of raw, heavy loam, produce a sickly yellow growth; buds may be formed on such plants—and they often are in abundance—but the plant has not vitality enough to withstand any sudden change of temperature or slight check to which it may be subjected, and the result is they all, or nearly all, drop. This often happens when the plants, after having been out-of-doors, are introduced to their winter quarters, and people are surprised at the circumstance; but, if one of the plants were turned out of their pots, and an examination of the roots made, wonderment would cease. The little fibre that can be made during the summer-time in a close, uncongenial soil becomes completely ruined by the autumn rains. Those, therefore, who would wish to grow Camellias well should begin with quite small healthy plants; they will then be able to lay the foundation of good specimens. Unless this be secured, no real substantial success can be relied on, for no amount of after-care will wholly compensate for injudicious treatment or neglect during the early stages of growth. Old, neglected Camellias may be renovated; but such work needs time and patience, and requires considerable judgment and experience to achieve. A good free, healthy root-action is the main point to be secured, and, in order to obtain this, we must not be in too much haste, for, as I have already said, the Camellia will not submit to being hurried. No plant is more willing to yield good results under pains-taking culture, but it imperatively demands that its peculiarities be studied. Healthy young plants in 48-sized pots, quite large enough to begin with, may be procured, fairly rooted; they should be dwarf, furnished with several shoots, and well clothed with foliage. They should be wintered in a light house, in which good ventilation can be given; and all buds should be picked off, growth not flower being now the chief object to be aimed at. If the plants have been more than one season in the same pots, the soil will probably be well filled with fibres, and they may be advantageously shifted into a larger-sized pot; if, on the contrary, there be any paucity of roots, or they appear to be in rather an unhealthy condition, the better way will be to go over them with a sharp-pointed stick, extract as much of the old soil as possible, and fill up with a compost consisting of peat, leaf-mould, and sand, in equal proportions. This will induce the old roots to produce fresh fibre, and encourage the young rootlets to a more lively and healthy action. In this way an extra amount of vigour will be gained without the bulk of the soil being augmented; the drainage, too, should be looked to, and the plant replaced in a clean pot. If this be done as soon as the wood is ripened early in autumn, and while the roots are in active growth, much will be gained, as in the spring when making their young wood, they will be in a condition, be benefited by an occasional watering with clear soot and guano-water. Although, however, manure-water may be sometimes applied with advantage during the growing season, it must be used with judgment. A newly-shifted plant will not require any stimulus, but if the head of foliage be large and the pot well filled with roots, a pinch of guano in the water, given now and then, will be found to produce good results. No rule can, however, be laid down in this respect, practice and observation will alone enable the cultivator to treat each plant according to its individual requirements. In the employment of soot-water no mistake can be made, inasmuch as soot is the manure *par excellence* for the Camellia; there is no danger of souring the soil with it, and it may be given with benefit at all times of the year; its employment either in the form of manure to the roots or in that of outward applications to the foliage, in the way of syringing, is equally beneficial. The best and easiest method of using it is to tie some up in a bag and place it in the water-tank, in which the properties of the soot will be extracted without leaving any scum on the water. This water may then be used for syringing, and will leave no stain on the foliage. Soot-water, without stimulating rank growth, promotes the formation of firm, sturdy wood, gives plumpness to the buds and colour to the foliage, such as no other manure will produce; but these results will only be effected by its constant use and if prepared in the manner just stated. The Camellia is naturally impatient of a strong glare of light or hot sunshine; it loves and luxuriates in partial shade—filtered sunlight, so to speak, such as a shrub gets which stands upon the clearing of a wood, partly overshadowed and protected by larger neighbours. Shade in the growing season will, therefore, be necessary, combined with abundance of atmospheric moisture; a good washing with the syringe, morning and evening, and damping down the walks and stages on hot days, will supply the latter desideratum. In dull damp sunless weather, however, the syringe should not be employed, or weak, flaccid growth will be the result, which, later in the season, will affect the general appearance of the plant, and certainly impair its bushy shrub-like habit, which is the true characteristic of a well-grown Camellia. Drawn, spindly growth when the plant is young results in naked, leafless branches when old, and, in order to regain symmetry, the knife has to be used; but this will never be found necessary if sufficient air be given during the growing season. When the young wood is made and fairly ripened, the plants should be turned out into a cool sheltered spot. If they have been properly cared for during the summer, and are in all respects in a good healthy condition, they may safely be allowed to remain undisturbed for a while, and an occasional heavy shower of rain will do them no harm; in fact, a few good early autumn showers seem to fill up the foliage in a manner unattainable by the watering-pot and syringe. If any of the plants, however, should appear to be at all imperfectly rooted, they should be placed where they can be sheltered at will from heavy rains. A deep pit is the best place in which to put them; but, if that accommodation cannot be had, they should be housed early before heavy rains are to be apprehended. The time required for the formation of good large plants may be much shortened if the bloom-buds be all picked off, inasmuch as each flower allowed to expand lessens the vigour of the season's growth. I know an estate on which the owner goes annually over the Rhododendron plantations and removes every bud; his object in so doing being to secure luxuriant and healthy foliage. There are not many, perhaps, who would be willing to make this sacrifice for the sake of extra verdure; but tastes differ, and flower is but transient, while foliage, such as that of the Rhododendron, is pleasing at all times of the year. Be that as it may, the effect of the removal of the bloom-buds in this instance has had a marked effect upon the development of the plants, which are models of healthy vigour. The kind of soil best suited for the Camellia has been frequently discussed, the majority of English growers pertinaciously clinging to strong loam. There must be no admixture of any kind. Others, on the contrary, advocate a mixture of fibry peat and loam, and some even recommend other ingredients; while a few, but very few indeed, are willing to admit that the loam may be nearly or quite dispensed with. Loam, no doubt, as procured in some localities, is excellent; but there are only a few samples which may be safely used in a pure state for plants which, like the Camellia, require much care as regards root-action. The indiscriminate use of loam produces, I believe, many disappointments and failures. A stiff soil requires much care in watering, and I have seen Camellias potted in a loam, so-called, which was but a few shades removed from clay. In the case of a plant standing in the open ground there is a free and natural drainage which prevents stagnation, and this may be imitated with fair success when planting-out Camellias in houses, in which, consequently, a closer and more tenacious compost may be used. In placing a plant in a pot we give it a purely artificial state of existence, and must, therefore, endeavour to neutralise, as much as possible, the ill effects attending the circumstances under which it is placed. The best soil in which to pot a plant is in that which yields the most nutrition, and, at the same time, favours the highest amount of root development with the greatest facility for preserving the same in a healthy condition. In stiff, tenacious, moisture-holding composts, these requirements do not exist, and they should, therefore, be avoided, more especially by amateurs or others who may be desirous of growing a class of plants with whose peculiarities they may be but imperfectly acquainted. Experienced cultivators alone should indulge in the use of unctuous soils and strong composts. In the case of the Camellia I should recommend a soil of a mixed and varied character and rather light than heavy. I have grown Camellias in a mixture of leaf-mould and fibry peat, intermixed with bog-earth and charcoal. This compost does not encourage rank growth, but in it the leaves acquire good substance, and a fine gloss which can hardly be obtained in a soil of which loam forms the principal ingredient. If I had a choice of soils in a thoroughly pulverised condition, I would select a compost consisting of equal parts of loam, peat, and leaf-mould, to which sufficient silver sand was added to make the whole open and porous. This mixture will promote the development of wood and foliage, and if a proper drainage be provided, and the plants are firmly potted, the watering-pot may be used with freedom. When once the Camellia has acquired a certain size and is withal vigorous and in good condition there will be no necessity for diminishing the floral display; self-denial will then reap its reward, and a glorious profusion of bloom may each season be looked for and indulged in without detriment to the health of the plants. Should, however, any one specimen show signs of ill-health, give it a rest by divesting it of bud, and that, with care in other respects, will generally be found sufficient to restore its lost vigour. Those in possession of old neglected plants may try their hands at renovating them if they should feel disposed to do so. As the source of evil will generally be found at the root, they should be shaken out of their pots, as much of the old soil as possible should be removed, and the roots washed clean. Old roots decayed at the end should be pruned back with a sharp knife; the whole should then be dressed with sand, and put back into as small a pot as the roots can be got into, using a very sandy, light soil, and ensuring perfect drainage. They should then be placed in a slight bottom-heat where plenty of air can be given, syringed on warm days, and shaded from the hot sun. The first season they will probably not make a great amount of growth, but the foundation of it will be laid, and, if the pots have become filled with young healthy fibres, they will stand the next year any little pruning that may be considered necessary to bring them into shape, and will break away freely from the old wood. Large, naked-stemmed plants treated in this way and side-grafted upon the old wood, often make handsome specimens, inasmuch as a great many grafts may be inserted on one plant. I am acquainted with a collection of Camellias which were restored from a miserable state of decrepitude to fine health by treating them much in the manner just described. They were, however, plunged in bottom-heat in the open air, having merely sufficient protection to ensure them against bright sunshine and heavy rains. The result was that the roots were excited early into growth, whilst the tops took their own time to start; and when they did so there were plenty of new roots to support it. In the course of years the plants thus renovated became noted for their beauty; they were afterwards planted out, and were literally smothered with bloom every year, whilst as regards foliage and general growth, they were all that could be desired. With respect to the best shape for Camellias, individual tastes and fancies must, of course, be consulted. They may be grown, as is often seen, in the form of standards, or in that of bushes or pyramids; the latter I consider the most desirable for pot culture. Pyramidal Camellias are, however, not often met with, mainly perhaps because attention to training them in that way is necessary during the earlier stages of growth. If, however, the foundation of a pyramid be properly laid, there is no more difficulty in preserving that form than any other, and with a little care in training, pruning will hardly ever be found necessary. A good-shaped pyramid, densely furnished with foliage and covered with bloom, is an object worth taking some pains to secure, and one which well repays any extra care and labour that may have been bestowed upon it.

Byfleet. John Cornhill.

The Coca Leaf.—Sir Robert Christison stated, in his introductory address, delivered to the members of the Edinburgh Botanical Society, that, with a view of testing the alleged stimulant properties of the Coca leaf, he chewed some of it during two ascents of Ben Voirlich. On reaching the top he felt greatly fatigued—Sir Robert is a man advanced in years—but the Coca leaf quickly relieved him, and he made the descent easily and enjoyably. He further stated that its use has enabled him to walk sixteen miles without experiencing any of the fatigue which he would otherwise have felt. Its botanical name is Erythroxylon Coca, the leaves of which are used as stimulants by the Peruvian Indians.

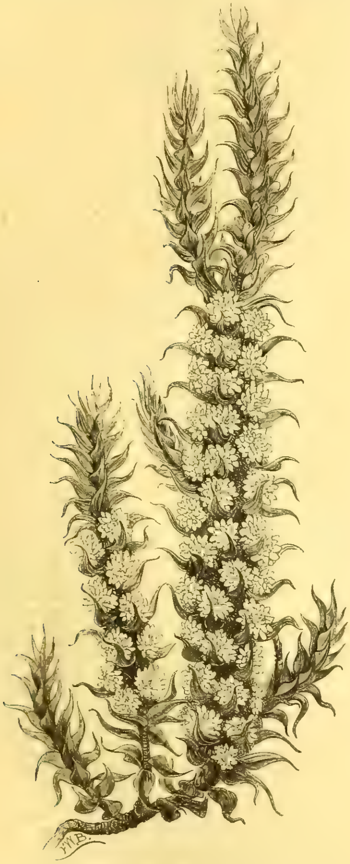
Pavia macrostachya.—The Pavias, species of Horse Chestnut, differ from it in bearing smoother fruit and in being of a more dwarf character. Pavia macrostachya is altogether distinct, and possesses features belonging to no other tree or shrub that we have ever seen or read about. Broader than high, stooling from the root, and covering the ground closely, it forms a hemisphere of foliage which, when adorned with its many spikes of fragrant Hyacinth flowers, blooming in July, and enduring a long time when most other shrubs have ceased to bloom, few plants will give so much pleasure. We saw last summer, in the grounds of R. B. Parsons & Co., a specimen growing under the shade, 50 ft. in circumference, 8 ft. high. Mr. H. W. Sargent mentions one in his own grounds (1869) twelve years old, 60 ft. in circumference, 8 ft. high, bearing (as he wrote) between 300 and 400 racemes of flowers. It should be planted in extremly rich soil, and—possessing in itself every charm of clustered shrubs—is, of all plants, the best suited to stand wholly isolated.—E. S. Carman in "Moore's Rural."—[This is indeed a shrub of remarkable value for all who pursue what the "Saturday Review" has begun to patronise as artistic gardening. It is undoubtedly, as Mr. Carman says, one of the best possible shrubs to stand alone, but we have also seen it, affording a very charming effect as an undergrowth beneath low trees. Its fine foliage and long spikes of flowers almost make one dislike calling it a shrub, as it possesses all the amplitude of noble leafage and charm of stately blossom that belong to the finest of its race. It seems indeed a tree come down to nestle on the Grass.]

The Massachusetts Horticultural Society has issued its schedule of prizes for the year 1876. Among them are 60 dollars each for the best seedling Pear, Apple, and hardy Grape, with smaller ones for the small fruits, and nearly equal premiums for new flowers and vegetables, to be awarded mostly after a trial of three years. The Whitcomb premium of 200 dollars is offered for the best seedling Potato originated since 1870, and to be awarded in 1878.

THE INDOOR GARDEN.

NEW DOUBLE WHITE EPACRIS.

(EPACRIS ONOSMÆFLORA FLORE-PLENO.)



New Double White Epacris.

This is the first double-flowered Epacris which has been introduced to our gardens. It forms a vigorous little bush, a good example of which was exhibited by Mr. W. Bull at the meeting of the Royal Horticultural Society, which took place on March 1st, when it received a first-class certificate, a distinction which it well deserved, for we believe that it will be largely grown as a decorative plant when plentiful enough for distribution. It has deep green ovate-acuminate leaves, and axillary flowers of the purest white, each about ¼ in. in diameter, and as double as the blooms of a white Camellia. Some doubts were expressed at the meeting in question as to the identity of this plant with E. onosmæflora, a point respecting which Mr. Bull gives the following particulars:—"Before my plant was exhibited there had not, I believe, been a living plant of the double-flowered Epacris seen in this country. I have been years trying to import it, but until last year always failed to get it alive. The double Epacris alluded to in 'Seeman's Journal of Botany' is in the Kew Herbarium, a dried specimen, but no living plant of it has been seen in this country. Obviously a dried specimen in a herbarium is a very different thing from introduced living plants. However, of my plant there is not even a dried specimen in the Kew Herbarium. There is no doubt about my Epacris being a double form of E. onosmæflora, which is so totally different from E. impressa that there can be no mistake about it. E. purpurascens has been adopted by some botanists as the name of the single form of my Epacris, but that horticulturally should read 'onosmæflora purpurascens,' for it is merely a rosy-purple variety of the species, of which the normal type is white-flowered. When I received my Epacris, the collector wrote me in ecstasies about it, and said he had seen a plant of it only 10 in. in height, of which 7 in. were so covered with double blossoms as to hide the stem, reminding him somewhat of a well-grown Balsam." Since the plant above alluded to was exhibited by Mr. Bull, we have again seen it, and also dried specimens as sent by his collector, which were even more copiously flowered than in the case of the living plant, and from these materials the accompanying illustration has been made. Well-grown specimens of it may be expected to be very effective when thickly studded with snowy flowers, and their value is enhanced by the fact that double flowers remain in perfection longer than those on the single-flowered types from which they have originated. B.

ATACCIA CRISTATA.

The first impression produced by an inspection of this most singular plant is one of wonder as to the uses of the various strange appendages that are attached to the flowers. One might be pardoned for coming to the conclusion that it was the result of an effort on the part of Nature to produce something in the vegetable world totally different from everything else. In form, and also in texture, we find nothing like it; there are a few others nearly allied to this Ataccia, but it may be taken as the best representative of its particular class. The roots are thick and coarse, proceeding from a stout short rhizome, from which issue the leaves, some five or six in number. The petioles are smooth, a few inches long; the blade of the leaf is oblong acuminate, of a dark green colour, nerves prominent; in a strong plant the leaves attain a height of 18 in. As many of your readers may not have seen the flower, a description of it may be useful. The scape rises well above the leaves; it is erect, smooth, and terminated by a large four-leaved membranaceous involucre; the two outer leaflets are opposite, the two inner are placed side by side, erect, very large, almost transparent, and, like the rest of the flower, of a deep chocolate colour. The numerous peduncles are each terminated by a single flower, forming a drooping umbel. Besides these floral peduncles there are a number of others, sterile, long, drooping, and tendril-like in shape; these still further increase the singularity of the flower, than which nothing in the whole vegetable kingdom is more calculated to interest even the most casual observer. The plant is easily grown, provided a few things essential for its existence are attended to. It is found growing indigenous in Malacca, occupying damp situations; this points to the necessity for its always being kept in a comparatively high temperature, as also to the soil never being allowed to get dry. The fact of this and many other plants luxuriating naturally in swampy ground often leads to their being subjected, under cultivation, to a course of treatment that is fatal to their well-being. It is frequently supposed that, because a plant grows in a state of Nature in soil saturated with stagnant moisture, an imitation of this is essential under pot culture; whereas with these moisture-loving subjects it is just as necessary that their pots should be well drained, and the soil in which the roots are placed of such a character as will allow the water to pass freely through it, as it is with plants that exist naturally in drier ground. Anything approaching a sour condition of the soil, or deficiency in the drainage, will quickly cause the roots of the Ataccia to rot; after which it is very difficult to save the plants from dying, as when reduced to this state they are slow in forming fresh roots, and the soft nature of the leaves and stem is such as to cause them to flag and shrivel up when the supply of moisture requisite for their growth is cut off. The plant is propagated by division of the side-shoots which are thrown out from the main stem. As these are produced but sparingly, it is slow to increase. The side-shoots are generally emitted near the surface of the soil, and in a few months after their appearance push out roots from the base, independent of those that support the plant. When these have attained an inch or two in length, and are about to enter the soil (in which state they will generally be found towards midsummer) the side-growths may be taken off with these roots attached, and placed singly in 4 or 5 in. pots, according to the strength of the crowns. The pots should have an inch of crocks in the bottom. The soil ought to consist of the best fibrous peat, with a good portion of the earthy matter shaken out—four parts to one of fine broken crocks and sand in equal proportions. Secure them in the pots with two or three small sticks, and give enough water to settle the soil. They should then be placed under a propagating glass, but not kept so close as many plants would require to be, or they will be liable to rot. They should stand on a moist bottom, in a temperature of 75° in the night, and 10° higher in the day with sun-heat. They must be shaded from the sun. In the course of a month or six weeks they will be well rooted, and should be placed on a side shelf near the glass. They like plenty of light, but will not bear exposure to the sun in bright weather well. When they have got inured to the full air of the stove, if in the smallest pots recommended, they should be moved into others an inch larger, using similar soil to that in which they were first placed; admit a moderate amount of air every day through the summer, give plenty of water to the roots, and moisten the plants overhead with the syringe in the afternoons when the house is closed. About the middle of September the temperature should be lowered 5° in the night and 7° or 8° in the day, giving more air and discontinuing both shade and syringing; as the days get shorter, reduce the heat 5° more, and keep them through the winter in about this temperature. During this season they make little growth, and consequently much less water should be given; but on no account must the soil be allowed to get so dry as required by many plants at this season. When the days lengthen at the beginning of March, raise the heat 5° in the night, and 6° or 8° with sun-heat, giving a little air in the middle of the day; they should then be shifted into pots 2 in. larger, using soil in every way as before. When the weather gets warmer, shade will be necessary in the middle of the day, raising the temperature day and night to the maximum point to which they were subject the preceding summer. The strongest will most likely push up one or more flower-scapes through the course of the season, but these will be much smaller than what will be produced as the plants get stronger. Treat them in every respect as during the previous summer and autumn, reducing the temperature as the days shorten, and wintering as before. The ensuing spring, about the same time, give them pots 1 or 2 in. larger, according to the progress they have made; but they must not at any time be over-potted, as too much root-room seriously affects their growth. A 10 in. pot is large enough for a full-sized plant that has got several crowns. The strongest plants will in all probability form a second crown during the season, and go on increasing each summer; if it be thought desirable to increase the number of plants rather than grow them into larger specimens, they may be divided and treated as recommended in the first instance. But it is when they have got from three to five crowns each, that they become the most effective, as in this size they will often push up four or five flower-stems at a time; and when the plants are strong they will bloom oftener. There is no stated time for their flowering, as when vigorous they usually produce a spike of flowers from each leaf, coming in at intervals through the growing season, but they mostly appear in the spring, when active growth has fairly commenced. It is not well to syringe them overhead at the time the young scape is issuing from where it is produced—the inside of the base of each leaf-stalk—as it sometimes has the effect of causing it to damp off. As the plants go on, the lower leaves will decay and fall off, leaving a considerable length of bare stem that will show a disposition to throw out roots; if in the summer, when these appear, a little Sphagnum Moss be tied round the stem just under the leaves, the roots will quickly push into it, after which the crown may be cut off directly under the roots, placing it in a pot proportionate in size, and treating it as advised with the smaller crowns, where it will soon get established. The stool that remains will push up several growths, as there is a dormant eye at the point where each leaf has been produced. These can be either taken off and grown singly in pots, or may be allowed to remain intact. In the spring, just as the plants are beginning to grow, they should be turned out, removing as much of the old worn-out soil as can be got away without breaking the roots; and when they have occupied pots as large as those above mentioned, they may be placed in the same with fresh soil.

The Ataccia is but slightly troubled with insects, its sap appearing to be of too acrid a nature to be congenial to their tastes. Thrips may sometimes, though very rarely, make their appearance on the backs of the leaves, and may easily be destroyed by syringing. Should green fly be troublesome, it is best dealt with by fumigation. T. Baines.

PRIMULA ALTAICA.

The frequent references to this Primrose recently made in these pages have induced Mr. Badgery, of Birmingham, to search for some information respecting it in earlier publications, and he finds that it was exhibited at one of the Royal Horticultural Society's meetings on the 20th of February, 1849, when it is spoken of as follows:—"Among the subjects of exhibition perhaps the greatest novelty was a scapeless Primrose in a pot, covered with beautiful orange-eyed purple flowers of permanent character. This was exhibited by C. J. Darbishire, Esq., Rivington, near Bolton, who found it growing on grassy land, which had recently been cleared of brushwood, in the neighbourhood of Kawak, a quarantine station on the Asiatic side of the Bosphorus, near the mouth of the Black Sea. When found it was midsummer, and the plant was out of bloom, and Mr. Darbishire considered it to be only a common yellow Primrose until it blossomed in the following spring. It was stated that he had found it to be perfectly hardy, standing our winters well out-of-doors; but that, as it had a disposition to bloom early if the roots were taken into the house in the latter end of the year, it formed a beautiful and useful ornament to the conservatory during a dull and dark season. It was mentioned that its rich and delicate colour is only displayed to advantage, however, under bright sunshine, and that, when grown freely, its foliage is very large and robust; that it is a profuse bloomer, and that it possesses a slight but delicious fragrance. It was stated to be not different from P. altaica of the Russian botanists, and it was awarded a Knightian medal." Now, assuming that this Primrose was the true Primula altaica, it is evident that the description agrees exactly with the variety which we have of late commonly known under that name, but, if it be possible to show that the authorities of the Royal Horticultural Society of 1849 were wrong, it would help to solve the difficulty if the Primula altaica of the Russian botanists could be either produced or exactly described. Whether that or something else, I think the modern variety has every claim to be considered as a distinct species from Primula acaulis, it having many distinct and divergent features. I have now in flower a purplish-red Primrose, of somewhat irregular form, with a well-defined lemon-coloured eye that has been sent out by a well-known firm as Primula altaica; but such is the uncertainty that hangs over its identity that I hesitate to accept it as such. I should think that amongst the readers of The Garden there must be some able to settle this matter satisfactorily. A. D.

SWEET PEAS FOR THE GREENHOUSE.

About the beginning of March last year I filled two dozen 9 in. pots half full of common soil, which was mixed with a little rotten manure; I then placed a score of Sweet Pea seeds in each pot, and covered them over with about an inch of soil. They were then set in a cold frame and watered. By the end of a week the growth from each Pea was visible above the soil, and in another week they were 2 in. high. They were then potted into well-drained 8 in. pots, and returned to the frame. In a few days a further development was perceptible, and the additional soil was soon taken possession of; when about 4 in. high, about half a dozen branched Birch twigs 2½ ft. in height were put around each pot as stakes. To these the growths clung as they advanced; and by the time the tops of the stakes were reached, there was scarcely a twig visible—but, on the contrary, each pot was furnished with a pyramid of beautiful green leaves and abundance of flower-buds. As the flowers opened, they assumed one mass of the lovely shades found in well-selected colours of Sweet Peas. They were not only admired for their appearance in the conservatory, but they charged the air with a delicious perfume. Quantities of bloom were cut from them for other decorations, and the great quantity of flowers which they produced was most surprising. After a long period of great beauty in the conservatory, they began to lose vigour for want of root-room, when they were turned out of the pots and planted in the corner of a border, where they made fresh growth and furnished plenty of bloom for cutting in autumn. After potting and staking, watering was all the attention they required. In the summer months they may be grown in the open air until they come into bloom. Since then I have often wondered why this lovely sweet-scented annual is not more generally grown in pots. Under favourable circumstances and with the assistance of a little warmth, I feel certain they might be had in full blossom at Christmas.—PRACTITIONER, in the "Gardener." [This is a very good idea, and easily carried out. The best way would, of course, be to sow in autumn and winter in cold frames, introducing the plants into a sunny house from time to time.]

Destructive Effects of Gas Tar on Plants.—Mr. Renny showed, at the last meeting of the Royal Horticultural Society, leaves of Pelargoniums and Fuchsias killed by having been placed in a house which had been painted over with tar. Hard-wooded plants, such as Azaleas, were not hurt, nor Chinese Primulas. Among the Pelargoniums the tricolor varieties suffered most. The Hon. and Rev. J. T. Boscawen adduced other instances of a similar character.

Is Boiler-water Injurious to Plants?—Dr. Kellogg, of San Francisco, commenting on a note on this subject published in THE GARDEN of November 27, 1875, says:—"Not long ago the locomotive ran off the track at Mastick's Station, and the boiler was emptied. The exact area where the fluid fell is marked by an exceedingly rich vegetation, rendered more conspicuous by the poverty of the surrounding sand. The effect produced in this case is quite equal to so much guano spread over the ground." This he considers a sufficient answer to the question.

Aponogeton distachyon Indoors.—Allow me to inform Mr. P. Grieve (p. 280) that I was aware that this aquatic plant was thoroughly hardy, but my aim was to recommend it for cultivation in small greenhouses attached to town residences. I go a step farther, and assert that the flowers on my plant—growing as it is in a confined space—are much larger than any I have seen on plants in the open air. My small specimen, which has now three splendid flowers on it remarkable for their size, exquisite perfume, and delicate beauty, can be enjoyed without going out to face the biting northerly winds that now prevail.—QUO.

Lycopodium denticulatum Indoors and for Bouquets.—This is a good time to fill a number of pots, pans, or boxes with this very useful Club Moss for purposes of indoor decoration. Although all Lycopods like moisture, yet they will not continue to flourish long unless there is free drainage. L. denticulatum may be grown in any light sandy soil—in fact, we have large breadths of it growing under a stage without any preparation at all, and we find it exceedingly useful to pull up by handfuls as a base for short-stalked flowers, such as Violets and Stephanotis, in low flat glasses. Pieces of this Lycopod are also very useful for forming centres for bouquets, the green sprays, peeping out from amongst the flowers, relieving their brilliancy. Small bits dibbled in thickly now will soon form dense masses.—E. HOBDAY.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Glass Houses with open Laps.—I have just had a stove house erected by Mr. Rendle. My gardener says the system of glazing admits so much air that he will not be able to grow stove plants in it. If any of your readers have experience on the subject, I should be very grateful if they would let me know the result.—S. C. E.

Scilla natalensis.—I had a large specimen of this bulb from Mr. A. Roozen, Overveen, near Haarlem, in November, 1874. It failed to bloom in a warm greenhouse, and I moved it into a much larger pot, as I found it was pot-bound in the former one. It has grown more vigorously this season, but does not seem inclined to flower. The greenhouse is warm and dry, with a southerly aspect, and the ordinary flue-warming apparatus. Any hints on cultivation would be welcome. According to Mr. Roozen the bloom should be magnificent. —JAMES C. ROSS, *Baldon Vicarage, Oxford.*

Sempervivum Donkelaari Indoors.—A few plants of this variety, if planted in a large pot or pan early in the summer, will make an exceedingly handsome group for winter decoration in a cool house. The plants reach a height of about 9 in., and turn their heads to the light all round, so as to form a perfect and compact mass of foliage. It is one of the handsomest and most effective of the taller varieties, and makes a capital companion plant to Sempervivum canariense, arboreum, and arboreum variegatum; also for Echeveria metallica and E. metallica glauca.—A. D.

SEEDS AND SEED-RAISING.

SEEDS are capable of enduring extremes of temperature, which would prove fatal to the living plants of which they are the produce. The length of time during which seeds of certain plants will retain their vitality is uncertain, but it must in many cases be very considerable. Plants of the Raspberry, Gooseberry, and Strawberry have been raised from seeds contained in jam made from the fruit of these plants, such seeds having necessarily endured, for some considerable time, a temperature exceeding 212°, the point at which water boils. The great length of time during which some seeds will remain in the soil in a dormant condition, although to all appearance under circumstances favourable to germination, is very remarkable. Some twenty or more years ago the central parts of some large flower-beds here were planted with the common White Petunia (P. nyctaginiflora), and notwithstanding that every season since those beds have been occupied by various other kinds of bedding plants, no season has passed during which an abundant crop of seedling Petunias has not appeared upon them, although the Petunias have never since that time been allowed to flower in them. Similar instances have been observed in the case of Verbenas, Heliotropes, Pelargoniums, and other species of plants. Although many kinds of seeds maintain their vitality apparently undiminished for a great length of time when buried at certain depths in the earth, yet, when harvested in the usual way, a gradual diminution of vitality at once ensues, and it is generally found that the newer the seeds are, the larger is the per-centage that will germinate, and this per-centage will be found to diminish with each succeeding season; and, as a general rule, few kinds of seed can be depended upon for a crop after the second year. With some kinds it is even unsafe after the first. I have never known a seed of the Perilla nankinensis to germinate if more than a year old, and this is also the case with regard to many others; while, on the other hand, seeds of the Pelargonium will germinate even in a green and apparently unripe condition, and the plants so produced will generally be found to be more robust than those from seeds more thoroughly matured. But, as luxuriant development is, to some extent, opposed to fertility, it consequently follows that in the case of such annual plants as the Melon and the Cucumber, old seeds, or seeds not less than two years old, are to be preferred to newer ones.

The seeds of some leguminous and other plants are encased in a somewhat hard shell or covering, which generally causes them to lie for a considerable time in the soil before they germinate; but growth may in most cases be greatly accelerated by pouring hot or even boiling water upon the seeds, and allowing them to remain in it for two or three days before sowing them. Very old seeds of various kinds, which would not, under ordinary circumstances, germinate at all, may sometimes be induced to do so by the application of certain chemical substances, such as oxalic acid, newly slaked lime, &c. The ordinary conditions, however, necessary to induce seeds to germinate are, exclusion of light, and maintaining a certain amount of moisture and heat, the latter, of course, varying in accordance with the requirements of different species. The seeds of many of our most common indigenous plants or weeds will germinate in soil at a temperature but little above the freezing point (32°); and it has been even asserted recently that seeds have been found to germinate in grooves formed by blocks of ice. An earth temperature, however, varying from 50° to 60°, may be considered as that most favourable to the germination of the seeds of plants indigenous to Europe, while a bottom-heat of from 70° to 80° or upwards will be necessary to start into growth seeds of plants which are natives of tropical countries. In this country it is found that the seeds of many flowers, as well as those of some culinary plants, will not germinate until the seed has attained a certain degree of warmth, or, if they do grow, the low temperature in which the embryo plants are placed generally proves very prejudicial, if not fatal, to them. It is, therefore, never advantageous, but frequently the reverse, to sow seeds even of the common garden Beet, which is a variety of Beta vulgaris, and a native of the south of Europe, earlier than the first week of April. Such a course is also to be recommended in the case of the Scarlet Runner and the several varieties of dwarf Kidney Beans, &c., while the Tropæolum peregrinum, or Canary flower, a well-known decorative climbing plant, being a native of Peru, and, consequently, tender, is commonly sown under glass in a slight bottom-heat, and planted out when the season is somewhat advanced, but even then it generally sustains a considerable check. It is found to answer better to defer the sowing of the seed of this favourite climbing plant until some time during the first half of the month of April, or until the soil has become somewhat warm, and then to sow it in the open air where the plants are intended to flower. A very considerable portion of seeds of all kinds when sown in the open air during dry weather either perish altogether or germinate irregularly, and are consequently exposed for a long time to the attacks of birds and mice. It is therefore always advisable in the case of large seeds, such as those of Beans and Peas, not only to steep them in rain-water for twenty-four hours or longer before sowing them, but also to pour abundance of water into the trench or drill prepared for them, and, as soon as the seeds are sown, to cover them up immediately. In the case of smaller seeds, such as those of the different varieties of the Brassica tribe—Lettuces, Endive, &c., whenever it is necessary to sow during dry weather, the seeds should be previously steeped in water and afterwards partially dried, in order that they may be evenly sown; the soil, too, intended for their reception should be well watered before the sowing takes place. And when the seeds have been gently pressed into the moist soil, and covered with it (the covering, of course, varying in accordance with the size of the seeds), the surface should be made smooth and level, and at once covered with bast mats, or pieces of frigi domo, or any similar material which will combine the effects of excluding light, protecting the seeds from birds, and retaining to some extent the moisture in the soil; under such circumstances the seeds will generally germinate freely, and care must afterwards be taken to remove the covering soon after growth has taken place, selecting, if possible, a showery or dull day for effecting this removal. The various kinds of flower seeds sown in the open air, such as those of Mignonette, should, in order to ensure success, be treated in this manner. Very many of these, however, are usually sown under glass, and are consequently more under command than out-of-doors. It is, however, necessary to exercise care in the sowing of tender annual and other flower seeds under glass, inasmuch as many of them are so exceedingly small that they scarely admit of any covering in the form of soil. Gloxinias, Begonias, Calceolarias, and many others belong to this class, and should be sown in well-drained pots or seed-pans, in light soil, containing a portion of silver sand, but the surface should be made perfectly smooth and level, and should be moistened through the fine rose of a watering pot. On this surface the seeds should be sown, and pressed gently down; and they should be covered with a portion of soil, more or less, according to the size of the seeds sown. Where they are very small a mere sprinkling of silver sand will be sufficient; or, this may be omitted altogether, and the surface of the pot or pan merely covered with a piece of glass, which should be shaded with whitewash, or have a piece of paper placed over it, and as soon as the seeds have fairly germinated a little air should be admitted by raising one side of the glass and gradually exposing the plants to the light; or the surface of the pots or pans containing the seeds may be covered with a thin layer of damp Moss, which must be removed as the plants develop themselves. The best structure, however, in which to sow the seeds of tender annual and other plants is a close frame or pit, as free as possible from drip, and in which there is a slight bottom-heat and an atmospheric temperature of from 60° to 65°. This should be covered with a mat or cloth so that light is nearly or altogether excluded, and as the germination of the various kinds of seeds sown will not be simultaneous, each pot or pan should be removed as soon as the young plants make their appearance, and gradually inured to the light before etiolation or blanching takes place.

If a course similar to what it has here been attempted to describe be pursued, we should probably hear fewer complaints of the worthlessness of flower and garden seeds than we sometimes do. That the necessary conditions for their healthy germination are not always understood is proved by the following statement. A purchaser of a packet of the herbaceous or large-flowered Calceolaria says:—"I sowed the seeds in a flower-pot, which I placed in the warmest part of a sitting-room window, and watered it daily, and, for the sake of additional warmth, I invariably placed the pot with its contents near the fire-place at night, and yet the seeds did not grow." The herbaceous Calceolaria has, by the practice of a careful system of selection, arrived at a state of great perfection, and a packet of seed generally produces such a varied assemblage of finely-formed and beautiful flowers that the practice of raising them annually from seed is usually followed, and the old plants are discarded as soon as they are out of bloom. But although this plant is a native of Peru, the seeds are nevertheless, exceedingly impatient of heat, and refuse to germinate in a high temperature, and as the end of April or the early part of May is the best time at which to sow, the pot containing the seeds should be placed on the north side of a wall and covered with a hand-glass, or even if the pot be merely covered with a piece of glass, the seeds will generally germinate very freely. P. Grieve.

THE VARIOUS RACES OF GARDEN FUCHSIAS.

By W. B. HEMSLEY.

The occasion of presenting our readers with an engraving of this remarkable variety seems an appropriate one for giving a few historical notes on the introduction of different species, and the progress of hybridisers in raising new varieties and new strains. In the first place, a few words on the distribution of the fifty or sixty species of this elegant genus. With the exception of three or four, they are all natives of Central and South America, growing in the temperate regions of the mountain ranges from Mexico southward, and gradually descending until, in the extreme south, their home is near the sea-level. The remaining three or four species are only found growing wild in New Zealand. One of these, F. excorticata, introduced in 1824, is a tree of considerable size, occasionally attaining the extraordinary height of from 30 ft. to 40 ft., with a trunk as much as 3 ft. in diameter. The others are slender trailing shrubs, with small leaves. F. procumbens, of quite recent introduction, represents this section. They have alternate leaves, no petals, or only very small ones, and the flowers—in F. procumbens at least—are erect, a character confined, so far as I am aware, in the American species to the varieties of F. arborescens. The first publication of the name Fuchsia was by Plumier, a French botanist, in his "Nova Plantarum Americanarum Genera," which appeared in 1703. But it is a noteworthy fact that nobody has succeeded in identifying the plant figured and described by him under the name of Fuchsia triphylla with any known species of the genus as now understood; and Burmann, who, about half a century later, published Plumier's inedited plates, does not clear up the obscurity. The plant figured has altogether the aspect of a true Fuchsia of the splendens type, but it is figured and described as having only four included stamens. It is quite possible that it may be a plant unknown to modern botanists. The first undoubted Fuchsia was figured and described by R. P. L. Feuillé, in his "Journal des Observations Botaniques, etc.," iii., p. 64, plate 47 (1725), under the name of Thilco, the Indian appellation of the species in question. This was found by him on a mountain slope in the extreme south of Chili, and appears to be one of the varieties of F. macrostema (F. magellanica). It is singular that his plant has a five-parted disposition, which, however, may be regarded as an accidental occurrence familiar to cultivators of Fuchsias.

Introduction of Living Fuchsias.

Messrs. Lee and Kennedy, of the Vineyard Nursery, Hammersmith, appear to have first cultivated Fuchsias for sale in this country, and indeed in Europe. It is uncertain whether the true F. coccinea or F. macrostema (magellanica) was introduced first; but it is now certain that both of these species were in cultivation in this country towards the end of the last century—about 1786 to 1789. It would occupy too much space to adduce proofs of this statement here, and refer all the published plates to their respective species. A few years ago Dr. Hooker discovered the true F. coccinea at Oxford, and gave a plate of it in the "Botanical Magazine" (5740), pointing out its distinctive character from F. macrostema, commonly known as coccinea. I believe, however, that F. macrostema was introduced in 1788 and F. coccinea in 1789. The former is figured under the latter appellation in the "Botanical Magazine," t. 97, and the latter in Salisbury's "Paradisus," under the name of elegans. The next species we read of in cultivation is F. lycioides (rosea), in Kew Gardens, in 1796 (Andrew's "Repository," t. 120), followed by several varieties of macrostema, and the species excorticata and arborescens in 1824, microphylla in 1827, fulgens in 1830, corymbiflora in 1840, splendens in 1842, macrantha in 1845, and serratifolia in 1847. I may add here, that Sweet appears to have been aware of the distinctness of coccinea and macrostema, for, under pl. 216 of the second series of his "British Flower Garden," he says that the varieties of the latter are much hardier than the former. There is no doubt, I think, that Salisbury is right in his statement that F. coccinea is a native of Brazil, as it is almost identical with the plate of F. montana in St. Hilaire's "Flora Brasiliensis." This would account for its early disappearance, leaving the hardier Chilian species to bear its name.

An erect-flowering Fuchsia.

Early Natural Varieties.

Hitherto I have found no record of any new varieties previous to 1820. Among the first were two or three wild varieties of macrostema, imported from Chili; of these F. conica of Lindley was introduced in 1824, and F. discolor of Lindley was raised in 1830 from seeds collected by Mr. Anderson (who accompanied Captain King) at Port Famine, Falkland Islands. This is described in the gardening journals of that period as the hardiest of all Fuchsias, never being injured by the winters of Scotland even; it was raised by Mr. Lowe, of Clapton, and bore the name of F. Lowei in gardens. The first Fuchsia recorded as of hybrid origin, so far I am aware, is F. globosa; but it has the appearance of being a mere seminal variety. In Loudon's "Gardeners' Magazine" for 1832 I find the following passage:—"F. globosa (Hort.) is said to have been originated by some gentleman's gardener from seeds cross-impregnated between F. conica and F. microphylla." In the second volume of "Paxton's Magazine," in reference to this variety, the editor states that D. Don says it was raised by Mr. Bunney (presumably of the Kingsland Nursery) from seeds of F. conica. Soon after Mr. Silverlock, of Chichester, raised globosa elegans—a variety with longer pedicels—from globosa, but it was not known by what variety it was crossed. In 1838 Lowe's Atkinsoniana, an improved globosa, was sent out. The introduction of F. fulgens, cordifolia, and other species, opened a wider field for hybridisers, and new strains of varieties and improved varieties followed each other so fast that Loudon, Paxton, and other writers of the time were constantly appealing to raisers not to flood the market with varieties scarcely appreciably different from those already known. In "Loudon's Magazine" for 1839 several hybrids between fulgens and grandiflora (one of the macrostema set, raised by T. Colley, Hope Nurseries, Leeming, Yorkshire), are described. Among them majestica, flower, including footstalk, 4½ in. long, and 2 in. across; fulgida superba, flowers 3½ in. long, very compact, foliage large dark green; multiflora erecta, a neat grower and profuse bloomer, with good foliage. Day's racemiflora, raised by Mr. Dick, gardener to A. Annesley, Esq., Bletchington Park, between fulgens (female) and grandiflora (male) was awarded the prize for the best seedling at the Oxford Show in 1840. The same year Pontey's tricolor appeared; this was remarkable for its fine colouring, the sepals being tipped with green and the petals of a rich purple. A handsome hybrid, raised by Standish, between fulgens and globosa, was figured in the "Botanical Register," 1840, t. 2, and the same nurseryman flowered F. corymbiflora the same season. In "Loudon's Magazine" the latter is said to be as hardy as any Fuchsia. F. arborescens, singular in its terminal panicles of small erect flowers, does not appear to have entered into any of the hybrids raised either then or since. Writing on the subject of hybridisation Donald Beaton says—"F. arborescens will not receive the pollen of the macrostema set, whilst excorticata, impregnated with the pollen of either F. conica or globosa will produce facsimiles of discolor." This last assertion would seem to be based upon some error. In 1842 Messrs. Henderson, of Pine-apple Place, obtained a Banksian medal for F. Moneypennii, a luxuriant grower, with handsome leaves and very long spreading flowers, of a most brilliant red colour, raised by Morris Todd, of Rolvenden, Kent. The same season Messrs. Lane, of Berkhamsted, gained a similar distinction for their F. Lanei, a variety described as possessing the elegance of the older, without the coarseness of the modern kinds, the flowers being somewhat of the shape of the old globosa, but more expansive and singularly large; sepals bright crimson, petals of a light purplish hue. About this date a real advance was made by Pince (1842) with his F. exoniensis, a hybrid between F. cordifolia (female) and F. globosa (male), having long spreading flowers, calyx rich crimson, and corolla deep violet-purple; F. cordifolia not being so well known as fulgens, it may be observed that it approaches F. splendens, but it is less hairy, and has broad heart-shaped leaves. The same year, Mr. Cripps, of Tunbridge Wells, sent out F. Venus Victrix, raised by Mr. Gulliver, gardener to Rev. S. Marriott, Horsmonden, a variety that has given birth to many others, and even now is regarded as a valuable one for purposes of crossing, and it is known to most young gardeners. In 1843 a list of good hybrid Fuchsias is given in "Paxton's Magazine," which include besides those mentioned—conspicua-arborea (Cattleugh), Stanwelliana (Purdie and Merrilies), Eppsii (Epps), formosa-elegans, Frostii, &c. Smith's (Dalston) Queen Victoria was another acquisition of this period. It was a fine variety, with pink green-tipped sepals, and crimson purple-tipped petals. In 1841, Standish raised the famous trio of varieties figured in "Paxton's Magazine," 1844, Vol. XI., plate 31, namely, Attraction, President, and Colossus. The first has short reflexed sepals and very large deep purple petals; and the other two have green-tipped sepals. They were the issue of formosa-elegans fertilised by corymbiflora. Another early variety deserving of mention is the old Dominiana, supposed to be a cross between F. serratifolia and F. spectabilis. Not to make this sketch too long, especially as I am still unable to present it in a compact and connected form, I will pass on to 1850, the date of the appearance of the first double-flowered varieties, with a violet, blue, or red corolla. The F. duplex and F. multiplex of Story were superseded by Henderson's F. Hendersoni in 1852, and in 1853 Turner's F. grandis exhibited a great improvement on its forerunners, to be in its turn supplanted by still more perfect varieties, the history of which is too recent to need recapitulation here. Coming to the varieties, single and double, with a white corolla, Mr. Story again has the merit of initiation with his Mrs. Story, Lady of the Lake, Queen Victoria, Snowdrop, &c., followed by Lucombe and Pince's Florence Nightingale, &c. That all these varieties have almost or quite disappeared in favour of superior ones is notorious. In 1850 Mr. Story sent out the first Fuchsia with a striped corolla, followed by Banks's F. striata perfecta in 1868, and Williams's F. striata perfecta in 1870. The latter is believed by some writers to be the same as Carl Holt, a variety of German origin. Mr. Bull's Gipsy Queen, a double-flowered striped variety, appeared in 1865, and Mr. Smith's Striped Unique in 1868. Finally there are the varieties with variegated foliage, the first of which—a very poor one by the way—was raised in Belgium. This was succeeded by several others, none of great merit until 1872, when Milner sent out his Sunray. The variety, of which an engraving is given on page 285, made its appearance in French gardens about 1868, and is said to be nearly related to F. globosa, from which it differs in its pale rosy colour and erect flowers.

In conclusion I may mention the introduction of some of the distinct tribes of American Fuchsias not already specially alluded to. First there are the miniature species, F. microphylla and F. thymifolia, both figured in Sweet's "Flower Garden" for 1838, of which some garden varieties, scarcely superior to the types, have been offered from time to time. F. cylindracea, a species of the same section, introduced in 1837, is quite unisexual; they are all natives of Mexico. Another South American group is distinguished by having alternate leaves, no petals, and being usually of epiphytical habit. One of these, F. macrantha (Bot. Mag., t. 4233), was introduced by Messrs. Veitch, in 1845, and exhibited by them in 1846. This is a very handsome plant, with large cordate leaves, and flowers 4 in. to 6 in. in length, but being of difficult cultivation it has disappeared from our gardens. I have recently described several new species of this section in the "Journal of Botany." Finally, there is the attractive little F. procumbens from New Zealand, with erect flowers, and a very large pulpy fruit.

Hedge Cutters.—In The Garden of October 10, Mr. T. Baines described a Dunse Switch Hook and a hook for cutting strong hedges; would you kindly let me know what English firm would supply me with these hooks, and, if possible, the price?—German. [The Dunse Switch Hooks, which are only intended for cutting one season's growth of hedges, are made at Dunse, in Scotland. Any of the principal nurserymen or seedsmen in London or in the large provincial towns, who sell garden tools, will supply them. I used to pay 7s. 6d. for one in the north of England. The stronger hook, with the bent blade for cutting hedges when the wood has got an inch or two in thickness, can be made by any intelligent smith who can temper edged tools without snipping or turning in the edge; these I used to get made in the neighbourhood in which I happened to reside. The cost was about the same as that for the Dunse implement.—T. Baines.]

Typha as a Fibre Plant.—This marsh plant, commonly known in France as the Massette, and comprising three varieties, is found to yield a fibre capable of being utilized in a valuable way for textile purposes. The plant grows in a wild state and very abundantly, in streams of water, ponds, &c., and reaches to a height of about 6 ft. Heretofore it has been employed for seating chair bottoms, for thatching, &c., in the same manner as straw. The mode of extracting the fibre from the leaves, after the latter are cut and dried, consists simply in boiling them for several hours in an alkaline solution, and afterwards dressing them in a mill or under rollers, the process being then completed by washing. A yellowish paper is made, worth about 3½d. per lb. The fibre will also prove useful, it is thought, for fabrics and for cordage, being considered equal to hemp

THE FLOWER GARDEN.

SPRING PRUNING ROSES ON THE MANETTI STOCK.

Much has been said and written about growing Roses on the Manetti; some prefer it as a stock to the Briar. For pruning Briar Roses grown as standards or half standards, we have certain fixed rules laid down which have been proved by experience to be successful. As regards pruning Manetti Roses, opinions differ, almost every grower appearing to have a system of his own. One thing is certain, that it is always safe to cut clean away to the base any shoots which may cross each other, dead wood, and thin weakly twigs; from neither of the above is a good Rose ever produced. Some varieties on this stock (I am speaking of Hybrid Perpetuals) are very vigorous, making shoots in one season from 9 ft. to 10 ft. high; very often these shoots do not bloom, or if they do it is late in the summer; other varieties make shoots from 2 ft. to 4 ft. The latter may be pruned to about 18 in. above the ground. The longer shoots may be pruned down to 3 ft., and any shoots on the same stool may be cut down to 2 ft. Roses on the Manetti bloom much earlier than those on the Briar; therefore they should not be finally pruned until about the first week in April. If pruned earlier, the young shoots produced in April are often cut to pieces by the frosts and easterly winds which generally prevail in the spring. When such is the case, it is better to cut back again to a firm plump bud which has not been thus injured. If the amateur who is growing for exhibition find his Roses too early, he should cut back to an eye or two below the topshoots, the effect being to delay the blooming a week or ten days. One thing it is necessary for him always to remember, that the lower he prunes his Manetti Roses the longer they will be in coming into bloom; it is plain, therefore, that a medium course is best. If one were to cut a long rod down to 6 in. it would probably produce one long rod again, which would not bloom in time for the summer exhibitions. Should a large quantity of Roses for bouquets be required, it is a good plan to pull the long rods down to a horizontal position, merely cutting off a few inches at the top; the rod must be fastened down by means of small stakes driven into the ground, to which it must be tied. This operation should take place early in April; in the middle of May it will be found that the long rod has broken at every joint; the rod should now be raised, and fastened to a stout stake. After it has done blooming, it may be cut down to within 1 ft. of the ground, when it will push out several strong shoots, which will flower in the autumn, and cause the tree to assume the bush form. Dwarf or bush Roses on the Manetti must be well manured, mulched, and watered, as recommended for standards. They will bear rougher treatment than standards, and they are not so fickle as to soil, growing and flourishing where a Briar Rose would perish; but they should not, on that account, be neglected, particularly where fine blooms are required. Supply them regularly with liquid manure throughout the growing season in the same manner as suggested for standards, and keep the foliage clean and free from grub and aphis by means of a constant use of the syringe. After the first series of blooms are exhausted, the plants must be looked over and the shoots shortened to a good eye. It will be found that this process will greatly assist them in producing their second display of flowers in the autumn, and is far better than leaving them to chance.

Henry Taylor.

Geometrical Gardens and Old Houses.—We find in a contemporary the following:—"As the house is four centuries old, geometrical beds would be appropriate." We trust that all who care for natural beauty in a garden will discountenance this error. There is, of course, no true reason why the earth, and flowers, and Grass, should be converted into a carpet pattern before a house four centuries old than any other. There are many English houses four centuries old that look much more beautiful with the level Grass before them than they could be made by any amount of expense devoted to geometrical gardening. There are, indeed, not a few examples of fine old houses, the effect of which is, we think, marred by the formation of the old Dutch and other kinds of very artificial and very barbarous gardens.

Dell's Black-leaved Ornamental Beet.—This is now (March 16) very effective in the spring garden, its fresh shining foliage being of the deepest hue and very conspicuous, inasmuch as it has no rival among fine-foliaged hardy plants. It contrasts admirably with early-flowering bulbs, Golden Feather Pyrethrum, and the ordinary early-flowering plants usually employed for furnishing spring gardens, many of which, having white or yellow flowers, are considerably improved by being contrasted with the metallic foliage of this Beet. Not the least advatage belonging to plants like this is that they do good service both in spring and summer. For spring display this Beet should be planted deep enough to enable the roots to be entirely covered with mould, when the old foliage will continue effective until cut down by sharp frost; but it commences to grow again so early that the young leaves are in good condition for contrasting with the earliest Crocuses and other plants of that description. It also possesses the great advantage of being easily raised without the aid of a glass structure. Seed sown on a sheltered border early in April will be in good condition for transplanting in May, or if the beds or borders be unoccupied, it may be sown where it is intended to remain, and be thinned out to the required distances apart. For ribbon borders in straight lines, few plants are more effective either as regards uniformity in height or intense colouring. —J. Groom, *Henham.*

THE SWEET WOODRUFF.

(ASPERULA ODORATA).

This little wood plant, abundant in some parts of Britain, is worthy of some attention in the garden and shrubbery, especially in localities where it does not occur wild. Many would like to cut and preserve its stems and leaves for the sake of the fragrant hay-like odour which they give off when dried; and in May the pure white small flowers, profusely dotted over the tufts of whorled leaves, look very pretty. It may be seen covering the ground with its carpet of green frosted over with white, in some of the College Gardens at Oxford, and it is one of the many plants that may be allowed to cover the earth in a shrubbery where the barbarous practice of annually digging and rooting up the borders is not resorted to. It is sometimes used as an edging to the beds in cottage gardens, the odour filling the air. It is, however, as a wood or shrubbery plant—as a companion to the Wood Hyacinth and the Wood Anemone—that it will be most at home.

PROPAGATING ALPINE PLANTS.

Besides the provision made by Nature for the increase of plants by means of seeds, to which I especially alluded (see p. 240), there are of necessity other modes and processes by which this result may be attained. Being chiefly of an artificial character, these are specially applicable in the case of cultural variations, whereby choice varieties may be perpetuated in their true character. This result, as a rule, cannot be depended upon in the ordinary process of reproduction by means of seeds. Again, there are many plants, and some, too, of the most charming and interesting kind, that will not produce seeds in our variable climate, or do so in such a meagre way as to render this mode of reproduction almost valueless. A few remarks, therefore, on this subject at this season, when they can be readily turned to practical account, may be useful. First, let us deal with modes purely artificial, as they are the most important. Every one who has had any practice in gardening, whether as amateur or otherwise, knows that plants are increased by means of cuttings—that is, by removing short branches, cutting the same part below a leaf-joint, and inserting them in soil to which a considerable mixture of silver or other sharp sand has been added. At first sight the process may appear exceedingly simple, but there is something more involved in it than the mere mechanical process necessary to success, namely, the condition of the plant and the time at which the operation is performed; on these successful results hinge much more than on the mere mechanical process. In what, then, do those favourable conditions consist? At this season, the hitherto dormant energies of all plants are by the increasing action of the sun and various other equally important vernal influences in process of stimulation into active growth. This is shown by the production of numerous young shoots, which, if left undisturbed, become flower-bearing stems during summer; and it is just at this time, or a little later on, dependent of course on the season, that these young shoots should be removed with a sharp knife and a careful hand, and placed in a pot of sandy soil, not hard pressed—as would be necessary for hard-wooded cuttings—but of loose texture, depending more on a good watering for its consolidation after the operation has been performed, and finally plunging the pots in a close frame with a gentle bottom-heat. All, then, that will be required is to keep the frame close for a few days, shading, of course, from the sun, but no more than is absolutely necessary to prevent the leaves flagging; light, with a supply of moisture in the soil below, will assist to develop the foliage in a healthy state at one end of the cutting, and will speedily be followed by roots at the other. After, say a week, it will be advisable to remove the glass covering for half-an-hour in the morning, sprinkling the cutting pots with a fine-rosed can, if they are at all dry on the surface, the period of exposure being gradually extended; by this means, in the course of five or six weeks, good pots of healthy vigorous plants will be ready for removal from the frame to full exposure, with scarcely a single death amongst their occupants; and be it noted that this result can be attained in the same satisfactory manner at no other season of the year.

The number of plants, to which the foregoing remarks apply, are almost legion; in fact, wherever cuttings can be obtained. Sometimes it will be necessary to bare the crown of the plant, as in the case of Delphiniums, in order to get the fleshy shoots off with a bit of hard heel to them. No better general illustration can be given than is represented by the Dahlia, with the propagation of which every one is familiar. Apply the same general principle, and a large amount of success must follow. So much for the time; a word now as to the conditions. If healthy young plants be desired select your cuttings from a healthy stock—the more vigorous the young growth the better. With the view of obtaining these conditions earlier in the spring than Nature, in her ordinary course, will permit, it is an excellent plan, where the plants to be operated upon are grown in pots, to bring them into a warm greenhouse in February, and place them on a shelf close to the glass; by this means the stimulated vital energies of the plants will become early excited, and young plants thus obtained will form good blooming tufts during the summer and autumn. All the rarer Campanulas will, under these conditions, strike as freely as a Lobelia, and may be increased to an almost unlimited extent.

The growth of many Alpine plants is so dense that they are readily increased by division of the crowns. This process with very early-blooming plants should be deferred until after the flowering season is over, succeeded by a short period of rest, after which a fresh growth naturally follows; before this becomes too advanced the process of division should take place; this will be in the month of June or July, the young plants so manipulated requiring only the shelter of a close frame and a little shading from bright sunshine for a few days. For summer and autumn flowering plants, the present time is the best, and from these it is advisable, as the regular process of re-potting the general collection of Alpine plants will have commenced, to shake off all the old soil. Thus the operator is enabled to see exactly how to make the divisions to the greatest advantage; this is always better than thrusting a knife into the heart of the plant at random. One maxim I should like thoroughly to establish is that, except in the case of some of the mossy Saxifrages, never attempt to subject a plant of any value to the severe ordeal which this process necessarily involves after the beginning of October at the very latest. My experience is that additions made to the collection by a late autumn tour, when division must necessarily take place, are far from satisfactory, either to the donor or the receiver, and not unfrequently result in the plant being lost to both. I have before especially excepted the mossy section of the Saxifrages; these appear to appreciate the divisional process in the autumn and in any garden subjected to the ravages of the white larvæ of the Otiorhynchus. It is a wise precaution to insert portions of the various species about the month of October in small pots, so that, in the event of the old plants being attacked, you may have these to fall back upon. My advice to all who wish to maintain a collection of Alpines—and the same remark applies, to some extent, to herbaceous plants as well—is to secure yourself from losses by means of duplicates in small pots; this process may be attended with a little trouble, but the result is amply compensatory. Jas. C. Niven.

Botanic Garden, Hull.

Flowers for the Woods.—Under this heading (see p. 253), a correspondent recommends, among other things, Christmas Roses and Auriculas as rabbit-proof. It may save trouble to some of your readers if you let me tell them that out of a quantity of Christmas Roses (H. niger) and Auriculas with which I adorned a woodland bank not one has survived the appetite of the rabbits. Most of the Lily family are rejected by them, including Daffodils, Tulips, Snowdrops, Snowflakes, Lilies, Day Lilies, Asphodels, and others, and they cannot be too extensively planted; but even in that tribe the Crocus (which is also named in the article in question) is greedily devoured. I gave—in an early number of your paper (see pp. 9 and 88, Vol. I.)—a list of all rabbit-proof trees, shrubs, and flowers then known to me, and I regret that, though keeping a watch upon the subject, I have not been able to add a single species to the list of four years ago.—Salmoniceps.

Flint Edgings.—For gravel walks or for flower-beds flints form excellent edgings. If selected of uniform size, when properly laid they have a neat appearance, and for a kitchen garden they are, perhaps, preferable to Box or any other live edging, inasmuch as they neither harbour slugs nor insects of any kind. In laying them, the sides of the walks should be levelled as if for an edging of Box. The line should be stretched upon them, and they should be beaten well down with the back of a clean spade. This will leave a well-defined mark, and to this the flints should be laid and beaten gently into the soil with a wooden mallet. The necessary portion of soil should then be thrown out and replaced by gravel, which should be spread close up to the flints, in the same way as is usually done when a live edging has been planted. Should any of the flints become displaced they may be easily put right again, and, as a matter of course, they never wear out.—P. Grieve, *Culford Hall.*

Christmas Roses.—In reference to the note which you have published on Hellebores (see p. 260), allow me to say that I should like to see Helleborus abchasicus properly settled. The only doubt I have is that M. Boissier describes H. abchasicus as having several leaves, while I find only one leaf to each branch of the root-stalk; but there is certainly only one leaf to each branch of the root-stalk in H. antiquorum, olympicus, and guttatus, while Boissier describes them as having two leaves. I suspect the character is worth nothing. H. atrorubens (true), H. purpurascens, H. cupreus, and H. odorus, I believe to be all varieties of one species; the last (odorus) I do not think is in cultivation in Britain. H. antiquorum and olympicus I have no doubt are but one species. H. guttatus is, I believe, quite distinct from abchasicus, though I see one of your correspondents thinks them the same.—J. T. B.

—— "J. T. B." (p. 260) says that the Helleborus niger major is H. altifolius. This I have heard before, but not having Heyne's description of H. altifolius, I could not verify it. Can "J. T. B." send Heyne's description and so settle the question? I cannot think it is H. abchasicus; at least, I cannot reconcile it with Braune's description of that species. As to H. niger angustifolius, I feel very sure that it is the same as Sweet's niger vernalis—see Sweet's "British Flower Garden," second series.—Henry N. Ellacombe, *Bitton Vicarage.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Ostrich Feather Fern (Struthiopteris germanica).—For rich shady glens or shrubberies, few, if any, Ferns are finer than this. It forms noble circular crests of great elegance and beauty 3 ft. across, and fresh crowns are rapidly formed from runners at the root.—J. G.

Hepatica rubra and others.—I have a small plant of Hepatica rubra in flower, and find that it has the same rich red hues of colour that are seen in the single red form shown by Mr. Wilson at South Kensington on the 1st. of March. It is really a charming variety, and when abundant will make a lovely addition to our hardy spring flowers. We shall soon. I think, be able to enumerate at least a dozen distinct kinds of Hepaticas, as I believe that I have three distinct shades of blue, besides H. angulosa.—A. D.

PLATE XIII.

NEW DOUBLE POINSETTIA.

(POINSETTIA PULCHERRIMA PLENISSIMA.)

Drawn by H. NOEL HUMPHREYS.

This strikingly beautiful plant first flowered in Europe in December last, and we may safely assert that it has more than fulfilled the highest expectations entertained concerning it. Our illustration, which represents the inflorescence half its natural size, gives such an excellent idea of the colour and disposition of the bracts as to render minute description unnecessary. More than forty years have elapsed since the old P. pulcherrima was introduced to our gardens from Mexico, and no other plant—no, not even the gorgeous Orchids from its own habitat—have equalled it as a winter-blooming decorative plant; brilliant, however, as it is, it has certain drawbacks—it is thin in the centre, and the bracts radiate like the spokes of a wheel all in the same plane, a circumstance which gives to the inflorescence a certain amount of flat stiffness. In the new double form this fault is wholly obviated; we have a head of bracts equally large and equally brilliant, but we have a branched inflorescence consisting of a much greater number of bracts, all of which are arranged, as shown in our drawing, in the form of a rosette. As to the vigour of the plant, it is equally strong and free in its growth as the type, and we are told it is quite as easy of cultivation. The head is composed of seven or more stiff branchlets—most of which are set in a whorl round the base of a centre one, which projects several inches above the others. The whole produce no fewer than fifty or sixty bracts; they vary from 6 in. to 8 in. long, and several are 2½ in. broad. The bottom ones, being the larger, droop gracefully from their weight, and those which fill up the centre, being smaller, are less drooping, until in the centre of the head they are nearly erect, the whole forming a bouquet of the most brilliant glossy scarlet, not less than 16 in. across; it is rounded, too, fully as much as large bouquets generally are, and it lasts longer in a fresh condition than the single kind. When the striking effectiveness of this plant is seen, it cannot fail to find a place wherever winter decorative plants are in request. It is now over three years since we first directed attention to this plant (see The Garden, Vol. IV., 1873, p. 143); it had then just been discovered by M. Benedicte Roezl, who found it in May in that year in a small Indian village in the Mexican State of Guerero, and dried specimens of it gathered at that time are now in the hands of Messrs. Veitch & Sons, of the Royal Exotic Nursery, Chelsea, who also hold the entire stock of living plants of this brilliant novelty. When M. Roezl first sent home the specimens referred to, he forbore to describe the plant because, as he observed, no botanist or florist would trust his description or believe that the plant was so gorgeous.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Bedding Plants.—The propagation of all bedding plants should be now pushed on as fast as possible, remembering that it is in all cases far preferable to have a surplus at planting-out time than a deficiency. Bedding Pelargoniums that were struck last autumn and wintered in store-pots should now be potted singly in good rich soil that will push them forward before they are wanted for planting; they should have 3-in. or 4-in. pots, according to their strength, and, as soon as potted, they should be kept rather close to encourage them to grow.

Tomatoes.—A little Tomato seed should now be sown, as, when the plants are large and strong at planting-out time, they will fruit much earlier and produce a correspondingly greater quantity than if young and weak when planted. Sow the seed in a shallow pan filled with two-thirds loam to one of leaf-mould and sand, covering the seeds lightly and placing them in a warm frame or vinery at work; when they are large enough transplant singly into 3-in. pots, giving them more room as they require it.

Herbaceous Borders.—As soon as forked over, and the requisite manure has been worked in, Sweet Williams, Foxgloves, Carnations, Pinks, Phloxes, Pentstemons, Chelones, Delphiniums, Lychnis, Anemones, Mimulus, and others of similar character that

have been raised from seeds, cuttings, or layers, and have since occupied nursery-beds, should at once be transferred to the borders where they are desired to bloom. If their removal be delayed too long, the season's flowering is seriously injured. By those whose collection of herbaceous plants is so limited as not to include more than a few species, the White Everlasting Pea (Lathyrus latifolius albus) should be grown on account of its being so useful for cutting at a time when white flowers are not over-plentiful. The planting of Ranunculuses of the double Turban kinds should no longer be deferred, but if put in now they will in most situations do quite as well as if they had been planted sooner, especially in such a season as the present.

Peas and Spinach.—In localities where the land is unsuitable for sowing Peas early, and where, as suggested a few weeks back, they have been sown in strips of turf, pots, or boxes, and have been placed under a sheltered wall to harden, they should at once be planted, being careful not to break the shoots or the roots; in placing them in rows, if the ground be more than ordinarily wet, it will be well to plant them on the top of slight ridges, in all cases drawing the soil well up to the stems. As a protection from frost or winds put some small sticks to them, with a few branches of Spruce, Fir, Yew, Laurel, or any other available evergreens; failing these, some light boards, a foot high, reared up on each side and secured with a few pegs, will be found a great assistance. If in a neighbourhood where sparrows abound, at the time of planting-out attach to the sticks along the rows some white thread loose enough to wave in the wind. In some places these little marauders never touch the young tops of Peas, but, where they attack them, if some device of the above description be not adopted to scare them, they will frequently spoil a whole crop in a day or two, for, when the points of the young shoots are picked off, they seldom arrive at perfection afterwards. In planting-out Peas leave the rows sufficiently far apart (for dwarf early kinds 3½ ft. will suffice) to admit of a row of early Spinach between, which sow immediately the Peas are planted. Peas sown in the open ground should, as soon as they are up, have a little earth drawn to their stems and be protected from birds by threads as before mentioned. Directly this is done put into the ground the requisite number of Pea-sticks, which will not only give shelter and thus admit the growth of the young plants, but will also prevent the necessity of treading over the ground between the rows afterwards, which should be sown with Spinach in the usual manner.

Cauliflower and Lettuce.—Remove at once Cauliflower and Lettuce plants from frames, hand-lights, or where they have been grown under shelter. From frames it will be necessary to transplant all the Cauliflowers; out of the plants under hand-lights allow three to remain under each light, and they will be ready in a fortnight or three weeks before those that have been moved. Elevate the hand-lights on half bricks as the plants increase in size, lifting them off every day, which will prevent their buttoning, that is, forming small useless heads prematurely. The situation selected for these Cauliflowers should be open and plentifully manured, planting them 18 in. apart in the row, and 2 ft. between. When the soil is very wet, as it is in most places at present, much injury is done by continually walking over it. This can be obviated by procuring boards of sufficient length to reach across the space to be planted, at the same time answering the purpose of a line. A small handful of the soot and lime mixture that has been before recommended for all the Cabbage family at the time of planting, will not only act as a preventive to clubbing, to which most of the family are so subject in some grounds, but it also keeps in check slugs, and is worth all its cost as a manure. The less check these plants receive in moving the better heads they will make; consequently they should be shifted with all their roots intact, and good balls of earth. In reminding amateurs about the preservation of roots in any plant they are moving, it is somewhat difficult to convey fully what is meant; it is not alone the strong roots that should receive no injury — these do not usually suffer unless subjected to the roughest treatment — it is the small delicate fibres that are so easily broken, and which are the principal agents in sustaining the plants. For a few days after planting, or whilst there is any appearance of severe weather, it is a good plan to have at hand an 8-in. or 9-in. flower-pot to shade each plant from the sun or cover up during the night as occasion may require. Some of the earliest sorts of Lettuce should also be planted out from frames and from south walls, leaving one plant to each foot of ground; those that remain near the wall will come in a fortnight earlier than the transplanted ones. For Lettuces the ground can scarcely be made too rich, as the stronger they are grown the more crisp and tender will they be, likewise standing longer before running to seed. A dressing of soot and lime round the stems of both such as are transplanted and those that remain near the wall, will much assist them, as slugs generally take up their quarters under the shelter of such places.

Turnips.—These are often recommended to be sown so early that there is every probability of their running to seed before they have attained a size fit for use, but a little seed may now be put in. The White Dutch variety I have always found most disposed to run early to seed, but the Red American Stone will grow to a handsome size. I have for many years used no other kind; it is perfectly white inside and of excellent quality. The soil on which the early sowing is made should be rich to insure quickly-grown tender roots.

Leeks should now be sown; 3 or 4 square yards of ground will be sufficient, scattering the seeds similarly to Onions, either broadcast, or, still better, in rows, as they can be transplanted to prepared trenches when large enough. Many amateurs, who do not like the flavour of cooked Onions, are apt to suppose Leeks equally objectionable, but when thoroughly well grown and free from the disagreeable stringy character belonging to the puny, crowded plants grown on poor ground, they are so mild as to lose all the strong distasteful flavour.

Brussels Sprouts.—Of these a little seed should now be sown in a warm situation, to get them up soon. To grow this invaluable winter vegetable well a long season is required in order to give the plants time to attain their full size, in which case the produce will be above double that from the small ill-managed crops too generally met with when grown amongst other things, or alternately with Potatoes, as, on account of insufficient space, both Potatoes and Brussels Sprouts yield equally unsatisfactory results. It is far preferable to plant the Sprouts by themselves.

Peaches and Apricots.—Care must be taken that the protecting material that is over Apricot and Peach trees does not chafe the flowers and young leaves as these latter make their appearance, or it will do as much harm as good. Whatever material is employed should be so secured as not to touch them. Where branches of evergreens have been used as a shelter, they should be examined from time to time, to see that they are secure, as if the wind can easily move them, they will effect a similar injury.

Procure and sharpen ready for use the requisite quantity of Pea-sticks, sorting them into different sizes. Peas do not cling so well to old as to new sticks, but the best of those remaining from last year may be used mixed with new ones. Where any land that has been dug is of a very retentive nature, it is necessary to stir it again, as the incessant rains have made the soil in some places as soddened as if it had never been touched. A fork will be the best implement for the purpose, but in all cases it is advisable to wait until the principal portion of the superabundant moisture has had time to drain off, or the ill effects will be visible all the season. The unusually protracted winter has caused unavoidable delay in planting and sowing many things, and those who have put seeds indiscriminately into the ground will do well to examine the condition of such as have not vegetated, for any plant that has remained long in the saturated soil will be liable to rot, especially if the ground has been much trampled upon during the time of sowing.

Greenhouse Plants.

The season has arrived for re-potting many of the greenhouse plants, and a general survey of the collection should now be made for the purpose of picking out such as appear pot-bound or are likely to be benefited by being shifted into fresh soil. The process of re-potting ought to be carried out at no one time collectively, as it is always best to defer the operation to suit the nature of the different plants, and to take them in detail as growth is commencing. To do this it is requisite to make the necessary preparations, first of all obtaining pots of various sizes, which should be scrupulously clean, both inside and out, as it is of the utmost importance to the health of the plants that these should be porous and open. Any that have been in use before should be soaked in water and well scrubbed, so as to remove any particle of dirt or slimy matter that may have collected and dried on them, in which state they become almost impervious to air, and, consequently, unsuitable to the well-being of the roots of the plants that are grown in them. Before making use of the pots see that they are thoroughly dry, or the soil will adhere to the inside, and thus defeat the object sought to be obtained by scrubbing and cleansing them. Drainage is the next important matter, and here again it is imperative to observe cleanliness. If old crocks be used, they should be thoroughly sifted so as to remove all earthy matter and rubbish from among them before placing them in the pots. Those which are intended to be used for Epacrises, Heaths, and other hard-wooded plants should be placed in a tub of water, and stirred round with a Birch-broom, but this only becomes necessary when they have been left out-of-doors, and have soil adhering to them. If this be done, they must be laid out to dry before placing them in the pots. See that the latter are well drained, but in no case to excess, as the quantity of soil for the plant to grow in would by that means be considerably lessened, besides drying the ball much too quickly, thus increasing the necessity for more frequent watering, and consequently extra labour. An inch in depth is quite sufficient for a moderate-sized pot if the crocks be broken fine, and the soil prevented from running amongst them and blocking the interstices by scattering a little old Moss or Sphagnum lightly over them, placing over this a small portion of rough soil. Both this and any other used for the potting should be in a dry state, so as to admit of its being well pressed, or rammed into the pots, as occasion requires, to suit the different subjects to be treated. If the soil be too wet it binds much too closely together, and soon becomes water-logged, or otherwise in an unsuitable condition for the roots to penetrate in the requisite free manner. It used at one time to be the practice among cultivators to sift the soil for potting purposes, but this does not prevail now to any extent; and it is a matter of surprise that it ever came in vogue at all, or that it should continue, as it is detrimental in the extreme to the free growth of most plants. Before potting, see that the balls of the plants are in a healthy state as to moisture. If the soil at any time appear sour from over-watering, remove as much of it as can be done without injury to the main roots, and only give a very small shift, to be removed into a size larger later on in the season. Any that appear light in weight for the size of the pot they are in, or show from general appearances that they are likely to be dry in the middle of the ball, should be thoroughly soaked by immersing the pots in water, in which they should remain for several hours, to ensure the water penetrating and wetting the whole of the soil; for if this be not attended to before they are shifted, it is almost impossible to moisten them properly afterwards, on account of the rapid percolation of the water through the fresh soil surrounding the ball. It is a good plan to pierce the latter in several places, using for the purpose a sharp iron rod about the size of a cedar pencil. This should always be done when the balls are hard and root-bound, as is generally the case with such plants as Heaths, Epacrises, and Azaleas, when they require potting. In re-potting any of the above, confine them to as small a pot as possible, avoiding any cavities between the ball and the pot. To obviate this use the potting-stick freely, ramming the soil well; with the above subjects this can scarcely be overdone, provided it is in a proper condition as to moisture, which as before observed, should be rather dry than otherwise. Epacrises and Heaths of the hyemalis type should have their branches pegged out and regulated, so as to equalise the young growth as much as possible. Place them in positions where they can have a little shade during bright sunshine, and be otherwise well attended to by way of syringing, which should be done at least once a day whenever the external air is at all dry. A pit or small close house will be found the most suitable place for them during the time they are making their growth, or, if they are to remain with the general collection, they should be placed in as favourable a position as possible to receive the requisite treatment.

Azaleas that have been forced and are now making their growth should be placed where other plants will not obstruct the light and air from their bases, otherwise the young shoots now forming will lack the necessary strength to bloom freely. Syringe them well overhead, and close the house early, so as to shut in as much of the sun-heat as possible. This will assist in making a vigorous growth, and help to keep them clear of their great enemy the thrip, that is sure to attack them if the atmosphere in which they are growing be allowed to become dry. See that they do not suffer for want of water at the roots, as that would have a like effect, and is a frequent cause of plants becoming infested either with these or other insects. Azaleas at this season require a copious supply of water, and should not for some time to come be permitted to get really dry at the roots. This applies equally to those now making their wood, as well as to others that are swelling their flower-buds, the latter of which may be occasionally assisted by an application of very weak manure-water, in cases where the plants are cramped for root-room, and likely to carry a large head of bloom. The old A. amœna is still one of the most useful for forcing purposes, and where an early display of these much valued plants is desired, a good stock of this kind should be kept up.

Japan Lilies.—Any of these that have been wintered in sheds, under greenhouse stages, or other out-of-the-way places, will now require immediate attention, as the young growth will soon be protruding through the soil, and, therefore, if allowed to remain long in their present position, far from the light, the shoots will become bleached and drawn. A cold damp pit or frame will be found the best place for them at this stage of their growth, and also till the young shoots require more head-room, as there they can always be kept near the glass well up to the light and have what air they require. When treated as ordinary greenhouse plants on stages amongst others they generally become drawn and weak in the stem on account of being too far from the sun and air while making their usual rapid growth at the first start. After they are fairly through the soil give a good soaking of water if they appear at all dry at the roots, not repeating the dose till they really require it. When growth becomes more active and the pots begin to fill with roots, a greater supply of moisture will become necessary; but at this early stage the soil should only be kept slightly moist, and the longer this can be done without applying water so much the more likely are the bulbs to remain in a sound healthy state. A damp pit or frame having coal ashes or other similar material for the plants to stand on, favours a condition of this kind much better than the stage of a plant house; and in the former position plunging may be resorted to with great advantage in cultivating plants of the above character, using for the purpose half-decayed leaves or anything partaking of that nature. Japan Lilies do not readily admit of forcing, but where an early bloom is desired, a few may be placed in a warmer situation than the others, so as to bring them gently on and thus prolong the season of flowering. Choose a light airy position for this purpose, and keep them well up to the glass while the stems are soft and growth rapid, otherwise they soon become drawn. Where the re-potting of any of these has been delayed from any cause, there will now be great risk in interfering with the roots, as they are easily damaged on account of their fleshy brittle nature. The best way will be to leave the bottom portion of the ball undisturbed, and to remove as much of the top soil as can be done without injuring the bulb or breaking any roots immediately surrounding it; this can then be replaced with good rough lumps of loam and fibry peat in about equal proportions. In this the roots that are always emitted round the stem will work freely, and the plants be little the worse for not being entirely re-potted.

Statices.—These are generally treated as ordinary greenhouse plants, but to do them well they require a somewhat warmer temperature than is generally afforded to the usual occupants of the above structure. Statice profusa, as its name implies, is a very free-blooming variety, and deserves a place in every garden. Most of the tender varieties are slow propagators, and on that account are seldom seen, except in places where large collections of plants are kept up. Although they take time, they are not at all difficult to root if the young stems be bound up in Moss or Sphagnum, containing a little peat soil and sand, forming a rough ball about 3 in. through, which must be properly supported by tying each separately to a stake, to prevent the weight of the soil and Moss weighing them down from their proper position. When bound up and supported as above, they should be placed where they can have a gentle heat, such as a vinery, Peach-house, or any place of that kind affords, and where they can enjoy a natural shade, and a regular, moist atmosphere, keep them well syringed overhead, that the Moss soil may be maintained in a constantly moist state, so as to encourage the formation of roots, which the stems under these conditions soon begin to emit. The quantity of plants that may be obtained in this way is only limited to the number of young shoots available to be treated as above, for, if well attended to by way of syringing, every one is sure to form roots. When they have done this in sufficient quantity to render it safe to sever them from the parent plant, they should be cut off and potted with the Moss and soil adhering, without disturbing them in any way; if then placed in a close atmosphere for a short time they become quickly established, and soon form serviceable plants. S. Halfordi is likewise a very desirable variety, having much larger leaves and flowers, and altogether a more robust habit of growth. Both are valuable summer-blooming plants that last long in condition, and are well adapted for conservatory decoration. The large leaves of S. Halfordi soon become disfigured by thrip, an insect it is very subject to; these must be kept down by fumigation of Tobacco-paper, but the smoking should take place before any young growth commences, or the tender leaves would most likely become disfigured. A careful sponging with clear Tobacco-water will likewise remove them and any eggs that may have been deposited. Statices delight in a loose soil, as they require plenty of water while growing and blooming; peat and loam form a suitable mixture, or leaf-soil and the latter in the proportion of two-thirds of loam to one of either of the vegetable soils, to which should be added sufficient sand to keep the whole free and open.

Lapagerias are undoubtedly the handsomest of all greenhouse climbers, and well adapted for damp shady positions that would be found unsuitable for most other plants. These delight in rough well-drained soil, with an almost unlimited supply of water while making their growth; as this is now taking place, they should at once receive a good soaking, and, if in a position where it can be done, they ought to be syringed overhead at least once a day, and this will check both thrip and scale, to which they are subject. Cut away all shoots that have borne flowers, to make room for others just forming. Watch closely and protect any young growth protruding through the soil, as slugs are sure to seize upon the dainty morsel. Any strong shoots of these may now be layered where an increase is desired.

Stigmaphyllum ciliatum is a plant one seldom sees in greenhouses, but it is nevertheless of great value, on account of its rich canary-coloured flowers and their Orchid-like appearance, closely resembling those of an Oncidium. It makes a capital pillar plant, or does equally well for furnishing a trellis on walls, or any similar position. A peaty soil suits it best, and, as it is rather tender, it should have the warmest place assigned it. The forcing houses will now afford a plentiful supply of choice flowering plants to keep conservatories constantly gay, and, therefore, any that are fading should at once be removed to make room for others just coming in, that the house may be made as attractive as possible. Remove decaying blooms as they occur, that an appearance of freshness may be constantly kept up, and alter the position of plants by an occasional re-arrangement, as when seen in the same positions for any length of time they lose a portion of their interest. A few ornamental foliage plants, if judiciously placed among those in bloom, add much to their effect, and are generally more pleasing than large masses of gaudy colours alone.—J. Sheppard, *Woolverstone Park.*

Indoor Fruit Department.

Vines.—Muscats started as previously recommended in the early part of last month, will be pushing young wood rapidly, and at this particular stage of growth will be greatly benefited by a liberal application of tepid guano-water, which will greatly assist the bunches in acquiring their proper length. Disbud as soon as the strongest shoot is perceptible, and retain only the best bunch on each shoot until the setting process is over, when the bunches should be reduced to the number intended to ripen. Maintain a high but an agreeable temperature. As a rule we stop off heat by shutting the valves as darkness sets in, and in ordinary weather we seldom find the houses below 60° in the morning, a temperature in which the Vine luxuriates. Where early Grapes are to be gathered from pot Vines, in some cases they will be colouring. As regards watering, look to them carefully, but after this stage avoid the use of manure-water. Permit a freer circulation of air, and withhold the syringe by degrees. If red spider make its appearance, revert to hand sponging as the quickest and most effectual mode of exterminating it. In succession houses, where Vines are in good condition, and have pushed sufficiently to require tying in, that operation will require to be carefully done and by degrees. Grapes in bottles should be examined often, in order to remove faulty berries. Where they still hang on the Vines remove them at once, and well dress with styptic; otherwise they will bleed. All late Vines should now be started, that is, such as Lady Downes, Alicante, Gross Colman, and other late keeping varieties.—J. Hunter, *Lambton Castle.*

Pot Roses.

These should now all be carefully staked and removed to a cooler house, so as to prolong their season of flowering. If grown purposely for cut bloom the buds should be carefully tied as soon as they are half open, and shaded with paper during the sunny part of day; if allowed to open fully, they soon drop after being cut. As soon as the buds commence to burst, take a piece of soft matting and tie it loosely round them—an operation which keeps the flowers in shape on the plants for one, and often two days, longer than if they were allowed to open. Forced Roses require great attention at this season as regards shading and unshading, so as to give the foliage light. Air should be given on all favourable occasions, using the syringe sparingly overhead, but keeping the house moist by damping down the paths and stages occasionally. A piece of paper is the best shade for plants in flower during the sunny part of the day, if the house is not required to be shaded all over. Finish pruning all pot Roses this month, and continue to place fresh plants under glass every week, in order to keep up a good succession till Roses come in out-of-doors. Look over all plants for the Rose maggot every morning, for if not watched one maggot will destroy all the flowers on a small plant in the space of two or three days. Alternations of heat and cold often bring on mildew, and it must be carefully watched and checked by dustings of sulphur, for, when it once gets established in a Rose-house there is no stopping it during that season's forcing, and the foliage gets destroyed. Prune all pot Roses that have not yet had that attention, and, if required, clean and top-dress the plants, and place them under glass in cold pits or in a cool-house. If required for very late flowering in pots, place them in a pit with a north aspect, so as to keep them cooler than they otherwise would be. Water them occasionally, but sparingly, so as not to encourage growth too much, and, under such treatment Roses may be kept until late in June.—H. G.

Kitchen Garden.

Rain, snow-storms, and squally winds have been frequent in this district since my last communication, consequently work has been nearly at a standstill, and now, however fine the weather may be, it will be a hard matter to keep pace with the work requiring to be done. When the weather is unfit for outdoor operations, much may be done to advance the work in fine weather, by pointing and preparing rods, Pea-sticks, and labels; also looking over root stores, preparing seed Potatoes, &c.; all of which take up valuable time in fine weather. Walks also can be put in good order, and edgings repaired; if the walks be mossy or green, turn the gravel, and put a little fresh on the surface, well rolling it while damp, as when dry it does not bind so well. If salt be used to keep down weeds, it must be applied carefully, as it will kill Box or other growing edgings if it comes in contact with them. It is now time that all the principal seed crops were sown, Carrots and Beet excepted, both of which, if sown too early, are liable to run to seed—the first or second week in April is sufficiently early to sow them, and, if possible, both should be grown on land that was well manured last year, or, if manured now, the ground should be deeply trenched, and the manure put at the bottom. Sow in drills, 15 in. apart. We generally have a small piece, with alternate rows of Beet and Carrots, thus combining the useful and the ornamental. Dell's Crimson Beet and Parsley alternated are also very effective. If the ground be ready, Asparagus may now be planted. Dig out a trench, a spade in width and depth, level the bottom, and on this place two-year-old seedlings at a distance of 18 in. in the row, and 2 ft. from row to row, filling in with the soil from the next trench, and so on to the end. This mode is far preferable to the beds usually raised so high above the ground-line, in which many roots perish through exposure, and in a dry season do not derive any benefit from the small amount of rain that may fall. With a fork lightly loosen the surface of established plantations, and give them a sprinkling of salt or guano, which will be all the dressing required till the autumn. Seeds of Asparagus may also now be put in; sow rather thickly to insure a crop, and thin out to 6 in. apart when 3 or 4 in. high. If not already done, plant out Shallots, Garlic, and autumn-sown Onions, also Lettuces, Cauliflowers, and Coleworts. Thin out finally the Cauliflower plants under hand-lights, and earth up those remaining; the lights should now remain quite off, unless there are indications of frost. Chicory, Salsafy, and Scorzonera, where in request, may now be sown—the former is much in request in some places blanched for salads, and the others frequently serve as second course vegetables, when other kinds are scarce; all may be sown in drills 1 ft. asunder, and require deep, moderately rich soil. Sow a good breadth of Turnips; a cool, moist situation should be chosen for them, and, as soon as up, dust them over with wood ashes or soot, as a preventive of the fly. Radishes should be sown in quantity, according to demand, fortnightly, and will require protection from birds, either by netting or sowing with the seeds a dusting of red lead; this latter is an invaluable deterrent. Another sowing of Cauliflower and Early and Mid-summer Broccoli should now be made, and those previously sown be pricked out and grown on without hindrance of any kind, and the same remark will apply to Celery, the trenches for which, if the ground be vacant, may now be dug. Usually we grow this crop in double lines, the trenches being 2 ft. wide and 4 ft. between the trenches, on the ridges of which Lettuce and Radishes are grown and gathered before the soil is required for earthing the Celery. Should warm weather set in, the earliest Potatoes will soon be through the ground; they must therefore be watched, and the soil drawn over them in anticipation of frost. Plant main crops as soon as the soil is in a suitable condition; meantime let the seed be spread out thinly to sprout.

Forcing Vegetables.—If hot-beds be ready for Cucumbers, the plants may be at once put out, or the seeds may be sown in the hills. Till the rank gases engendered by the heating of the litter have passed away, air must be freely given. Ridge Cucumbers and Vegetable Marrows may now be sown and raised in such frames. Earth up Potatoes in frames, and as the crop is dug, utilise the space for pricking out Cauliflower and Lettuce, or for sowing French Beans, Radishes, Mustard, Cress, Basil, &c. Cover over Rhubarb and Seakale as suggested last week. and, perhaps, as the season is so late, it will be advisable to introduce another batch of Asparagus roots into the forcing pits. Tomatoes that are intended to be fruited in pots should never be allowed to get pot-bound till they are in their fruiting-pots. If wanted in fruit early, let them get pot-bound; pinch out the leading shoots, and the side laterals will soon break into flower.—W. Wildsmith.

THE FRUIT GARDEN.

POT VINES IN SMALL GARDENS.

In many gardens with only a small glasshouse attached to the dwelling, there is seldom sufficient room to plant out Vines to any great extent, and as the holders of these often desire a few Grapes of their own cultivation, the best, easiest, and most profitable way is to grow the Vines in pots. In miscellaneous plant-houses it is difficult to rear the young Vines into a fruit-bearing state; therefore, it is generally advisable to procure ready-grown fruiting canes from some respectable nurseryman, the outlay in this way being a small consideration if future returns be taken at all into account. The principal thing to bear in mind in choosing Vines is to select varieties which are easily managed. The varieties of Black Hamburgh are the safest to deal with amongst the dark fruiting kinds; white fruiting sorts may consist of Royal Muscadine, Foster's Seedling, Buckland's Sweetwater, the Duke of Buccleuch, and the Duchess of Buccleuch. The latter is small in berry compared with that of the Duke of Buccleuch, but for producing quantities of bunches there is no Grape can excel the Duchess of Buccleuch, an important advantage to those with inadequate space for the cultivation of Grapes. Before placing the Vines in their selected positions, wash every inch of the canes with soft soap and water, using a hard brush. When the roots are close to the surface do not disturb them, but remove any loose soil and replace it with a layer of moderately fresh cow manure; they are then ready for starting into growth, and should be arranged where they can receive as much sunlight and heat as possible, which are mostly to be obtained at the extreme end of the house, and sometimes against the wall of the dwelling; and as Vines do not spoil either the growth or appearance of other climbers, a cane may often be trained with advantage into any spare corner. About the beginning of April is quite early enough to start the Vines into growth; little or no fire-heat is necessary at this time, and they have the whole summer before them in which to swell and ripen their fruit. Plenty of sun-heat and abundance of light are of great assistance to the inexperienced Grape-grower. To do justice to the other inmates the Vines cannot be started quickly at first; and this is a decided advantage, as, when growth takes place in moderation, it is not so liable to become weak, straggling, and unfruitful. In fine weather the temperature should be about 55° at night; and, in colder weather, it may be 10° lower without affecting the Vines; but there is one course which must be avoided as much as possible, and that is to keep them very close and warm for a week or two, and then expose them suddenly to a much colder atmosphere. The side-shoots must have some support as soon as they are 6 in. long, and do not tie them too firmly. Pinch or stop each shoot one or two leaves beyond the bunch; and there should not be allowed to remain on each Vine more than six bunches. Do not cut any off until it can be distinctly seen which are the best formed; and thin the berries as soon as they are well established. Too many should not be cut out at first, but, at the same time, see that one berry does not interfere with the swelling of the other; in most cases at least one-half is not too many to take out. After this, give a little manure-water three times a week until the fruit begins to ripen, when nothing but clean water should be used. Guano, in a liquid state, is the best kind of manure which can be used, and it has no offensive smell. At no time must pot Vines be allowed to want water; and, when the fruit is colouring, a free circulation of air should pass around them; but in the summer time Grapes swell and ripen well in pots with the same treatment in the way of air and heat as conservatory flowering plants, and in this way summer Grapes might be grown in every small conservatory in the country. When the Vines have produced one crop, it is very seldom they are worth fruiting again in the same pots. M.

Fruit Prospects.—These are again very promising in this district, stone fruits generally showing fine buds. Apricots were in bloom by the 1st of this month, and are now setting well with a slight protection; Peaches and Nectarines just coming into a fine healthy bloom; Plums generally well set with buds, both on standards and walls; Apples and Pears promise well, except where exhausted by excessive crops last season. The present cold weather is of great benefit in retarding bloom, which would otherwise have been premature, and, as a natural consequence, more liable to injury from any spring frosts that might ensue.—W. Cox, *Madresfield.*

RIPENING OF LATE PEARS.

Mr. Gilbert (page 236) asks for the opinion of midland and northern district fruit-growers on late Pears. With a good collection of Pears for many years, 200 miles north of London, Beurré Rance and Bergamotte Espéren used always to ripen fairly, except after very wet, sunless summers, but if allowed to remain exposed to the air of the fruit-room, shrivelled a good deal. Ne Plus Meuris, Easter Beurré, unless after hot summers, used to ripen indifferently, until by accident I hit upon a plan that much improved them. At that time I wintered a number of my best Pears in broad, shallow boxes about 9 in. deep, as well as in ordinary drawers. One autumn, soon after the Pears were gathered, a quantity of old Peach wall blinds were heedlessly piled several feet deep upon one of the boxes filled with Easter Beurrés, and so close as to exclude the air. The box and its contents were lost sight of until the middle of February, when the Pears were found quite plump, whereas those in the drawers and other boxes were much shrivelled, and did not ripen well even when put in a warm place; and those that had been covered by the blinds having lost very little by evaporation, ripened readily in a little warmth. From that time forward I always kept these late Pears closely covered up until near the time of their being wanted, with the best results. At that distance northward, in ordinary seasons, these varieties of Pears used to be in about a similar condition at the time of gathering to what they are in the neighbourhood of London on a wet season, but even here Easter Beurré does not always ripen freely if allowed to shrivel much early in the winter. It is evident that the loss of moisture, which precedes shrivelling, prevents their ripening as they ought. A thoroughly good fruit-room, neither too damp nor too dry (a convenience not by any means so common as it ought to be), has a great deal to do with the ripening and flavour of both late Apples and Pears. T. Baines.

A New Ladder for Fruit Gathering.—The members of the Missouri State Horticultural Society, after having carefully examined the Wright Self-adjusting Step-ladder, state that they hail with pleasure the introduction at last of an implement so long needed, viz., a step-ladder suitable for the use of fruit-growers. The Wright ladder in this respect is perfect, being strong, durable, light, and cheap, besides possessing the important and novel feature of instantly adjusting itself so as to stand firmly and level on any uneven ground or hill side, a feature of the most decided merit, and one not found in any other ladder. The above statements were heartily approved and unanimously adopted by the Society, and the president and secretary were authorized to affix their signatures thereto, as expressive of the opinion of the members in regard to it. Such a ladder is much wanted in England, and we trust it may soon be introduced.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Strawberry La Grosse Sucree.—This is an early variety not yet in general cultivation; it ripens from seven to ten days earlier than Keen's Seedling in the open air, and forces well. I have this day (March 16) picked a good dish from plants started the first week of January last.—W. Cox, *Madresfield.*

Unripe Wood v. Fertility.—In all cases it may be set down as a fact that unripe wood is useless for fruit-bearing, or for forming fertile wood. It is dangerously deceptive as far as inexperienced pruners are concerned, as it is furnished with promising wood-buds, and many are thereby induced to rely on them, more especially in the case of Peach and Nectarine trees on open walls, and thereby lay the foundation of future failure.—James Groom, *Henham.*

Black Prince Pine-apple.—As a winter-fruiting Pine this is scarcely so well known as its merits deserve. We have from December to the present time cut a number ranging from 5 lbs. to 7½ lbs. The fruit is well grown, and is very handsome for the table, and when cut is very clean in the centre; its flavour is quite equal to that of any other winter variety.—W. Cox, *Madresfield.*

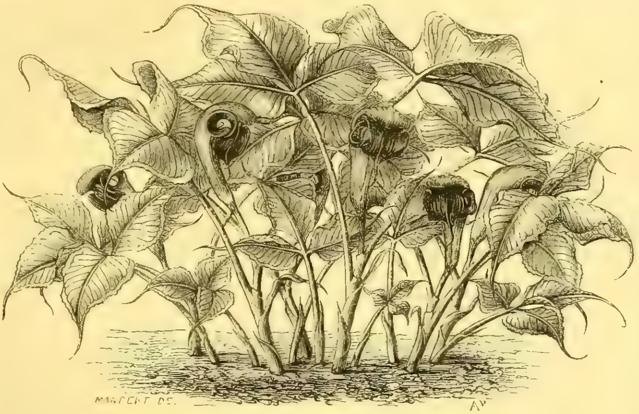
Fruit Trees on Gable Ends and Cottage Walls.—All who can would do well to help and encourage the planting of good fruit trees in these positions. I observe that the practice is pretty general in parts of Cheshire. It is desirable not only from the profit of the fruit, but also because the blossoming trees are even more effective than the early border flowers in beautifying the cottage garden in spring.—B.

Tomato Leaves and Aphides.—Everyone who trains his Tomato plants knows that his bands become covered with a strong-smelling exudation from the leaves. A French horticulturist, M. Sisroy, discovered by accident that this is poisonous to aphides, and that water in which Tomato leaves had been macerated, was quite as effective in destroying them as tobacco-water. In our climate, Tomatoes require very severe cutting away of the rich foliage to encourage the ripening of the fruit therefore this experiment can easily be tried.—V.

A GRACEFUL AROID.

(ARISÆMA PRÆCOX.)

THE annexed illustration represents one of a curious section of Aroids, namely an Arisæma, many species of which well deserve culture as decorative plants, for, like Pitcher Plants and Huntsman's Cups, they are so distinct in habit, and their spathes are so singular, that they never fail to attract attention from those who pass by the more common stove and greenhouse plants. Many of the Arisæmas are admirably suited for pot culture in warm greenhouses or in plant stoves, and the present species, together with A. triloba, is one of the best. Its leaves are ternate or three-lobed, the lobes being broadly ovate and drawn out at the point into long tails, while the margins of the bright green leaflets are wavy or sinuose; the spathes are elongated, of a dull greyish-white colour striped with green, the incurved margin of the mouth being dark brown. In general appearance, indeed, they remind one of the curled or hood-like pitchers of the Darlingtonia. A good idea of the general appearance of plants of this kind may be gleaned from the accompanying woodcut. Like most other Aroids they luxuriate best in a rich open compost, and require a copious supply of water when making their growth. After the leaves die off, which they do after the spathes have withered, the pots in which they are growing may be packed away, like those in which Gloxinias are kept, until required for starting in the ensuing winter and spring. This plant has long been grown in Continental gardens under the name of A. ringens. B.



Arisæma præcox.

SPANISH HERBS.

SPANIARDS are great believers—and not merely those of the lower class—in the virtues of the native herbs of their country or immediate district. The doctor's office is constantly usurped by the herbalist, a wise man or woman, who, partly from natural talent, and partly from having received oral instruction from father or mother, and partly from long exercise of the healing art, has acquired a surprising amount of herbal knowledge. The herb doctor's house, situated in some out-of-the-way and little visited hill town, is well known to all the neighbourhood. You make your visit to it, and—if it be not the herb harvest, when the doctor is out on the hills gathering in his stock of plants to dry for the winter—you will be welcomed with Spanish courtesy, and the whole house placed "at your disposition." From the ceiling hang bundles of dried or drying herbs of all sorts, sizes, and perfumes; bulbs and roots hang in festoons, reminding one of the strings of Onions in an English peasant's cottage, from beam and rafter, and around the white-washed walls. Or, if you like to see the herb doctor doing business, you will see him sitting during market hours outside the little "plaza" of his town, his dried herbs in bundles piled beside him, and the women returning from market buying at ½d. apiece or less, one or more of these tiny bundles, asking directions as to which will suit their case or that of some one of their children, and as to how the medicine should be made, and how strong the decoction. The herbalist very often cannot read or write; his or her knowledge is confined to the one craft, like that of the old women who deal in "simples." Yet the cures wrought by these people in cases of fever, colic, rheumatism, ague, want of appetite, and the like, are very great. The distinguishing feature of the Spanish herbs and flowers and shrubs is their intensely aromatic nature with a certain amount of bitterness.

The leading diseases among the poor are colics, wind spasms, and tertian and low fevers. Here, then, we find that Nature, as the Spanish poor themselves say, has placed the remedy beside the disease to which it is the antidote. The bitter of Quinine cures, we know, many forms of low fever; the aromatic pungency of Ginger cures colics and flatulence. So here we have bitter for fevers and pungent herbs for colics.

Foremost among Spanish herbs comes the Yerba (or herb) called Yerba luisa. This is a garden plant, the Lemon Verbena of our gardens. Among us the lady plucks a sprig and scents her hand with it; so does the Spanish lady; but she knows well its value, and treasures and dries for winter use every leaf of it. Its value is here well known as the finest cordial and stomachic in the world. It can be taken in two ways, either made into a decoction, with hot water and sugar, and drank cold as a tonic; or, better still, with the morning and evening cup of tea, thus: Put a sprig of Lemon Verbena —say, five or six leaves—into the tea-cup and pour the tea upon it; you will never suffer from flatulence, never be made nervous, never have cholera, diarrhœa, or loss of appetite; besides the flavour is simply delicious. No one who has once drank their Pekoe with a sprig of Lemon Verbena will ever again drink it without it. Some remedies—nay, many—are common property, common to the regular and irregular practitioner. Such are the "Flores cordiales," of which every apothecary's shop has a store. These cordial flowers consist of the Liquorice Stick, called by the poor Palo dulce, the Y. altea, and the leaves and the flowers of the common scented Violet. The three are dried, mixed up together, and invariably prescribed by Spanish practitioners for ladies suffering from a slight cold or oppression on the chest. The decoction must be taken luke-warm. Such again is the Tila, or dried buds, flowers, and fruit of the Lime or Linden tree. Marvellous is the amount of this used as tea. The decoction is taken either hot or cold, and is said to be a sovereign cure for all slight affections of the nerves. Are you low-spirited, nervous, or suffering from a sudden shock or fright?—be sure any Spanish woman passing by will bring you two farthings' worth of "Tila" from the nearest chemist's shop. Children suffer much from tape-worm, called by the peasantry "solitaria," properly "tenia." Nature offers as the remedy the leaves of the common Mint (Y. buena), eaten raw and on an empty stomach. The barks of trees are also much used medicinally in decoctions; the bark of the wild Pomegranate as an astringent, that of the Cedar tree as a soothing drink, besides a dozen others. But more used by regular and irregular practitioners than any other plant in decoction or tea is the "Grama." This plant is the common creeping Couch Grass (Triticum repens). It may be taken by the patient, in cases of fever, all the day, and is cooling and refreshing. This plant is used in such quantities that carts are laden with it. Needless is it to say that it is marvellously cheap, a remedy within the reach of all. Many drink the decoction (cold and sweetened with sugar) instead of water during the summer months. Then there is wild Rosemary (Romero macho), which, being the common brushwood of the hills, commands no price at all; a decoction of it is used hot, to bathe limbs in cases of rheumatism; or a few drops of its essence are put into the coarse "Aguardiente" of the country to give a fine flavour; or it may be used as a wash for the hair, although a Spanish woman's halo of glory seldom needs such stimulants. There is the "Captosera," or universal specific for colic and diarrhœa; "Jolivarda" and "Brusco," Manzanilla, or wild Camomile, good for creating appetite, and curing the pains of limbs, after fevers; "Cantahueso," a sort of large Thyme, a decoction of which will stanch a flow of blood from a stab or cut, or act as a tonic on a weak stomach; bark of wild Pomegranate, as a decoction to expel tape-worm; a beautiful species of Fern, called Falagera, poisonous, but useful to bathe rheumatic limbs.

PUBLIC PARKS.

By FREDERICK LAW OLMSTED.

A park is a space of ground used for public or private recreation, differing from a garden in its spaciousness and the broad, simple, and natural character of its scenery, and from a "wood" in the more scattered arrangement of its trees and greater expanse of its glades, and consequently of its landscapes. For the sake of completeness, recreation grounds not properly called parks will be considered under the same title. The grounds of an old English country seat are usually divided into two parts, one enclosed within the other and separated from it by some form of fence. The interior part, immediately around the dwelling, is distinguished as the pleasure ground or kept ground, the outer as the park. The park is often left open to the public, and frequently the public have certain legal rights in it, especially rights of way. The use of the park as part of a private property is to put the possibilities of disagreeable neighbourhood at a distance from the house and the more domestic grounds, to supply a pleasant place of escape from the confinement and orderliness of the more artificial parts of the establishment, and for prolonged and vigorous out-of-door exercise. The kept grounds, being used incidentally to indoor occupations, are designed in close adaptation to the plan of the house, richly decorated, and often exquisitely ordered by the constant labour of gardeners. Anciently the kept grounds were designed as a part of the same general architectural plan with the house, and were enclosed and decorated with masses of foliage clipped in imitation of cut and sculptured stone. Their lofty hedges often completely intercepted the view from the house toward the park. A recognition of the fact that the parks were much more beautiful than the kept grounds when thus fashioned, led early in the sixteenth century to the art of landscape gardening. The aim of the new art was, while still keeping the park fenced off, to manage the pleasure grounds in such a way that they would provide a harmonious and appropriate foreground to landscapes extending over the park, and to make such changes in the park itself as would improve the composition of these landscapes. The scenery of the old parks often has great beauty of a special character, which is the result of the circumstances under which the more ancient and famous of them have been formed. These were originally enclosed many centuries since for keeping deer. In choosing ground for this purpose, rich land having broad stretches of greensward pasturage, with trees more sparingly distributed than usually in the forest, was to be preferred, and this character would be increased intentionally by felling a portion of the trees, and unintentionally by the browsing of the deer; water, either flowing or still, was a necessity. In process of time the proprietors of parks established residences in them, and at length the size of their trees and the beauty of their grouping came to be matters of family pride. As the old trees decayed new were planted, with the purpose of maintaining the original character, or perhaps of carrying it nearer its ideal. Properties of this class, being associated with that which was oldest and most respectable in the land, came to be eagerly sought for, and to be formed to order as nearly as possible after the older type; and they are to be seen now in England by thousands. As a general rule, each element in their scenery is simple, natural to the soil and climate, and unobtrusive; and yet the passing observer is very strongly impressed with the manner in which views are successively opened before him through the innumerable combinations into which the individually modest elements constantly re-arrange themselves; views which often possess every quality of complete and impressive landscape compositions. It is chiefly in this character that the park has the advantage for public purposes over any other type of recreation ground, whether wilder or more artificial. Other forms of natural scenery stir the observer to warmer admiration, but it is doubtful if any, and certain that none which under ordinary circumstances man can of set purpose induce Nature to supply him, are equally soothing and refreshing, equally adapted to stimulate simple, natural, and wholesome tastes and fancies, and thus to draw the mind from absorption in the interests of an intensely artificial habit of life.

The Arrangement of Public Parks.

Private and public parks differ only in the extent of their accommodations for certain purposes, and most of the public parks in Europe are old private parks adapted to public use. When this is not the case, and a park for public use has to be formed essentially from the bare ground, its value will chiefly depend on provisions that cannot be fully matured, or have their best operation for many years after their groundwork is established. For this reason the selection of a site, the design for laying out, and the system of continuous management of a public park should be determined with great caution. The aim should be to produce the park rather than the more elaborate pleasure ground or garden style of scenery, not only for the reasons above indicated, but because a ground of this character can be consistently and suitably maintained at much less cost; because, also, it will allow the necessary conveniences for the enjoyment of it by large numbers of persons to be introduced in such a way as not to be unpleasantly conspicuous or disastrously incongruous; and because it favours such a distribution of those who visit it that few shall be seen at a time, and that the ground shall not seem overcrowded. It is a common impression that the loftier and more rugged and mountain-like the site of a public ground may be, and the more wild, picturesque, and grand scenery can be imitated in its improvement, the better it will answer its purpose. A principle of art however interposes, which M. Taine, in a discussion of the unimpressiveness of certain forms of mountain scenery, explains as follows:—"A landscape, in order to be beautiful, must have all its parts stamped with a common idea and contributing to a single sensation. If it give the lie here to what is said yonder, it destroys itself, and the spectator is in the presence of nothing but a mass of senseless objects." It is extremely difficult to provide suitably extensive and varied conveniences for the public use of a piece of ground, the elements of which are strongly picturesque, without destroying much of its original character; and the result of such attempts, unless under unusually fortunate circumstances and the guidance of unusual taste and skill, with the use of large means, is sure to be confusing and ineffective. Sites of much natural grandeur or even of bold picturesqueness are, therefore, to be selected for a park only where all necessary improvements for the convenience of a great number of visitors can be so managed that they will in some way strengthen rather than weaken the prevailing character. After these and more commonly attainable, are sites, the natural character of which would usually and significantly be termed "park-like." If the ideal of the old English park scenery be kept in view, rather than either that of a more picturesque or more artificially refined and elaborately embellished kind, it will be readily seen that in the site for a public recreation ground it is desirable that views of considerable extent should be controllable within its borders, and that in order to command them it should not be necessary that views beyond its borders be opened, the elements of which cannot be controlled, and are liable, even in the distant future, to be made inharmonious with those of the park; especially so, where such elements will have town rather than rural associations. It is generally better, therefore, that the outer parts should be the higher, the central parts the more depressed; that the surface should be tame rather than rugged, gently undulating rather than hilly. Water is desirable, and it will be best situated where it can be seen from the greatest number of widely distributed points of view. Relatively to the residences of those who are expected to benefit by it, the park will be best situated where there can be but little occasion to make thoroughfares through it. Otherwise, the less the distance and the more convenient and agreeable the intermediate roads, the better. As roads which radiate from a town are usually more important to be kept open than those which cross them, and as land near a town is relatively more needed for other uses than that more distant, it is commonly better that the breadth of the site should increase with its distance from the nearest point to the town, as in Prospect Park, Brooklyn. In the improvement of the site, attractive and suitable scenery has to be formed, and unsuitable elements of existing scenery changed or obscured; and at the same time, and on the same ground, accommodations of various kinds are to be prepared for great numbers of people, many in carriages and on horseback, many ignorant, selfish, and wilful, of perverted tastes and lawless dispositions, each one of whom must be led as far as possible to enjoy and benefit by the scenery without preventing or seriously detracting from the enjoyment of it by all others. The most essential element of park scenery is turf in broad, unbroken fields, because in this the antithesis of the confined spaces of the town is most marked. In the climate of Great Britain turf will endure, on favourable soils, twice as much foot-wear as it will in that of Paris, or northern France, or the United States; yet in the more frequented London parks it is found necessary to surround, with strong iron hurdles, the glades on which their landscape attraction is dependent. For this and other obvious reasons, a great extent of ground must be prepared expressly for the wear of feet and wheels. In the two principal recreation grounds of Paris, the woods of Boulogne and Vincennes, though both are suburban parks and not readily used by the mass of the people, the extent of such prepared by macadamizing, paving, and otherwise, is 480 acres. In the Central Park of New York it is 100 acres, and there is a constant public demand for its enlargement, which can only be met by reducing the verdant elements of landscape, and consequently the benefit to be obtained by the use of the park. In a public park for a city, therefore, the purpose of establishing such natural beauty as soil, climate, and topography would otherwise allow to be aimed at, must be greatly sacrificed under the necessity of providing accommodations for the travel and repose of many thousands of men and horses; and, on the other hand, the extent of such accommodations must be made less than would otherwise be thought desirable, in order that the special objects of the park may be secured in a suitable degree. A plan for a park is good, indifferent, or bad, mainly according to the ingenuity, tact, and taste with which these conflicting requirements are reconciled, and to the degree in which local circumstances are skilfully turned to account if they can be made favourable, or skilfully overcome if unfavourable, for this purpose. The problem is sufficiently difficult under the simplest conditions, and it is undesirable that it should be unnecessarily complicated by a requirement to provide for various purposes which have nothing in common with that of tranquillizing rest and exercise, and to which the element of landscape beauty is not essential. Soldiers, for example, drill and manœuvre, horses race, gymnasts and ball players exercise, on a piece of flat ground surrounded by buildings as well as in the glades of a wood. It is true that, when a suburban park is very spacious relatively to the number of people resorting to it for park recreation, a limited use of the larger turf areas for athletic exercises will injure it but little; but their frequent use for such purposes, especially if large assemblages of spectators are likely to be attracted, will be destructive of the value of the ground as a park, in the specific sense of the term. It is also to be considered that the proper rules and police arrangements for a park are different from those for a parade, ball, or gymnasium ground, or for a racecourse. Hence, when the most suitable ground near a town for these purposes adjoins that which is most suitable for a park, it is yet much better that there should be a marked division between them. Public buildings can be reconciled with the purposes of a park only in a limited degree. Ground about any building designed for an important public service should be laid out with a view, first, to convenience of communication with it; secondly, to its best exhibition as a work of architectural art. The neighbouring grounds should be shaped and planted in strict subordination to these purposes, which will involve an entirely different arrangement from that which the purpose of forming a quiet rural retreat would prescribe. A similar consideration will prevent monuments and statues from being placed profusely in a park, or at all in situations where they will be obtrusive. The same cautions apply to the introduction of botanic, zoological, and other gardens. Their main object is as different from that of a park as that of a billiard room from a library. Both one and the other may serve for recreation, and there is an advantage in being able to pass from one to the other; but the kind of recreation to be gained by one is not that of the other; the appropriate furniture of the one is not that of the other; and their perfect combination being impracticable, the two can be much better used apart, one at a time. In the larger part of the civilised world, circumstances are as unfavourable to park-like scenery as to grand scenery in the vicinity of large towns. The climate of France is nowhere as favourable to it as that of Great Britain, and even in the north it cannot be found in perfection unless on unusually suitable soil. In the south of France, in Italy, and on all the borders of the Mediterranean, in Mexico and California, and, in short, wherever a rich close perennial turf cannot be established, parks, properly so called, ought not to be attempted. In these cases, the two natural elements of scenery to be developed in a suburban public ground of great extent are forests (or "woods") and water. While trees in woods are by no means as beautiful as trees in parks, and a forest is apt to be gloomy and to produce an oppressive sense of confinement, the mystery of this confinement, so different from that of the walls of a town, makes it interesting and recreative. In the midst of well-grown woods, public accommodations, no matter how obviously artificial, nor within reasonable limits how large they may be, detract but little from the main impression, and if fairly well designed supply a grateful relief to what might otherwise be too prolonged a mass and too nearly a monotone of colour. The introduction of long strips of clear ground, even if covered with gravel or poor herbage, giving vistas through which the light may stream in visible beams, touching the walls of foliage at the side with an infinite number of lustrous flecks, produces a most agreeable impression. Bodies of water, whether formal or naturalistic in outline, in the midst of deep dark, tall "woods," are still more effective. For the same reason statues, monuments, and gardens of highly-coloured flowers may be introduced in the midst of woods to much better advantage than in parks.

City Spaces and "Parkways."

To avoid confusion, open spaces for public use in a city may be termed "places;" and broad thoroughfares planted with trees and designed with special reference to recreation as well as for common street traffic, "parkways." The value of public gardens, places, and "parkways," in distinction from parks and "woods," is dependent less on the extent of their sylvan elements than on the degree of convenience with which they may be used; those being the most valuable, other things being equal, through which the greatest number of people may be induced to pass while following their ordinary occupations and without serious hindrance or inconvenience. Hence the most important improvement made of late in the general plan of cities has been the introduction or increase in the number and breadth of parkways which, if judiciously laid out, become principal channels or trunk lines of common traffic, to which the ordinary streets serve as feeders, so that a man wishing to go a considerable distance shall find it a saving of time and trouble to take one of them on his way. In this respect Paris has taken the lead, having formed, since 1855, over 80 miles of such trunk lines of communication, from 100 to 300 ft. in width, provided with borders of trees or shrubbery, walks and drives of a special character, seats, special lighting arrangements, and other conditions more interesting and agreeable than those of common streets. The total length of boulevards and avenues lined with trees, under the direction of the municipality, within the enceinte of Paris, is 120 miles. Most of the large towns of Europe are making similar improvements, and at Washington, Chicago, Cleveland, Buffalo, Syracuse, and Brooklyn excellent examples of them exist, or are in process of formation. New York, with an area of about 42 square miles, has 7 miles of planted parkways, all of which are suburban, and as yet but partly finished. Simple places, piazzas, or plazas (the two latter being equivalent terms derived from the Italian and Spanish) have the sanitary value of making a city more airy than it would be without them. If furnished with gardens, they have the additional advantage of providing refreshment to the eye through the mind. If a piece of ground of one or two acres, in the midst of a busy town be laid out and managed with a view to providing upon it the greatest practical degree of plant beauty in trees, shrubs, flowers, and turf, and on the same general principles that a private garden for the same purpose would be, it will be of comparatively little use; for the walks will probably be indirect, the low planting of the outer parts will obscure the general view for passers-by, and there will be frequent crowding and jostling and disturbance of quiet. Neatness, and the maintenance of orderly conduct among visitors, in such a ground, becomes also exceedingly difficult. Hence, as a rule, at least in the United States, public grounds designed with this motive soon become more forlorn than open places would be. It is much better to decorate them in such a manner as will not destroy their openness or cause inconvenience to those who have occasion to cross them. For this purpose their plans should be simple and generally formal in style, their passages should be broad and direct, and they should be provided with seats in recesses or on the borders of the broader paved or gravelled spaces, leaving ample room for free movement. Their trees should be high-stemmed and umbrageous; Conifers, except in rare instances as permanent dwarfs, should be excluded, and flowers and delicate plants little if at all used except in vases and baskets, or as fringes of architectural objects. Interest will desirably centre in a fountain.

French Parks, &c.

Every considerable town in Europe now possesses grounds which are resorted to for public recreation, and most have several of different types specially prepared and kept at public expense. In France the State has long held and managed extensive "woods and forests," remnants of the original forests which covered the country in the time of Cæsar. More than twenty such are found within a distance from Paris which makes them available for a day's pleasuring by means of railway excursion trains. They vary in extent from about 1000 acres, as at St. Cloud, to 41,000 acres, as at Fontainebleau. Each of these contains a château, which at some time has been a royal residence, in connection with which there is a "park" or garden of several acres, generally containing a lake, fountains, statuary, monuments, parterres, and sometimes conservatories, aviaries, or other interesting objects. More or less historical interest also attaches to each, and in some quaint old customs are maintained, by which visitors are attracted. The forest proper is wilder, and in its depths many animals are found in a state of Nature. It is however divided by a network of broad avenues crossed by first, second, and third-class roads and walks, into spaces of five to ten acres, so that in passing through it vistas open at frequent intervals on both sides and in all directions. Some of these forests are distinguished for great rocks, trees, and picturesque scenery; some contain in their depths broad meadows and savannas, others lakes or streams with cascades; all are guarded from depredations and policed by an organised body of men trained in their duties under a military discipline. Among the more noted of these suburban resorts around Paris are those of Boulogne, Vincennes, St. Cloud, Marly, St. Germain, Rambouillet, Chantilly, and Compiègne, which together contain more than 170,000 acres. The first five are within ten miles of the city, and may be reached by rail in less than half an hour. Versailles is another resort yet more famous, and in which the woods are of less importance than the palace and gardens. The woods of Boulogne and Vincennes, being nearest the city, one at its west and the other at its east side, have since 1854 been placed under the jurisdiction of the Municipality, and fitted by extensive and important improvements, the better to serve as recreation grounds for the daily use of the citizens. The wood of Boulogne contains about 2500 acres, and the fortified line of the city forms its eastern boundary. The soil is naturally gravelly and poor, the trees are generally thickly sown, spindled, and weak, and the scenery flat and uninteresting. Several departmental roads (broad, straight, paved wagon ways) pass through it. Except in the refreshing wildness of a forest, it offered as late as 1855 but little to attract a visitor. Yet because of its close vicinity to the city it was already much frequented by the Parisians, and Napoleon III. saw in the neglect to which it had been abandoned the opportunity of making one of those sensations, to the frequent succession of which he owed so much of his popularity. The coarse, silicious soil was less costly to handle than better earth; good roads could be cheaply graded in it, and the materials of a sufficiently firm superstructure for so porous a base were to be had on the spot by simply screening its pebbles; for the same reason scarcely any artificial drainage was necessary. There were open meadows which could be extended to the banks of the Seine. The plan of improvement was adroitly adopted to turn all these advantages to account, so that in a short time, to those who kept to certain routes, the character of the wood seemed to have been completely changed. On the immediate borders of the new roads, and on the lines of certain vistas opening from them, the surface of the ground and the foliage appear varied and picturesque, and there are certain features of scenic interest, as a cascade and grotto, the rock of which was brought from the distant forest of Fontainebleau and skilfully wrought into masses with patches of concrete imitation of stone. The greater part of the old wood remained, as far as the operations of improvement are concerned, little changed and as uninteresting as a wood might be. The approach to the improved ground from the central parts of the town is first through the Champs Elysées, afterward for a distance of 1⅛ mile by the new avenue Bois de Boulogne (formerly de l'Impératrice). This consists of a driveway 60 ft. wide, a bridle road on one side of it 40 ft. wide, and a walk opposite of the same width, with borders of lawn-like ground on each side, the whole space being 300 ft. in width. In the original design this avenue was expected to become the fashionable promenade of Paris; but, probably because it was not in the outset sufficiently well shaded, fashion pushed further out to the road on the south bank of a new lake in the wood 1⅔ mile in length, where no tolerable provision had been made for it. To meet the demand, the original drive on the lake was widened to 45 ft., and a pad or bridle path introduced by its side, 40 ft. wide. Under ordinary circumstances the greater part of the visitors to the wood concentrate on these roads and the adjoining walk. There were in the whole wood of Boulogne before 1870, when a considerable space both of the old and new planting was cleared in preparation for the defence of Paris against the Germans, 1009 acres of wooded land, 674 of unshaded turf, 75 of water surface, and 286 of drives, rides, and walks (not including the race-track). The race-ground of Longchamps, which is a part of the property, contains 195 acres, the ground leased to the Acclimatation Society for a zoological garden, 50 acres, and the leased amusement garden, the Pré Catalan, in the midst of the wood, to which a charge for admission is made, 21 acres. There are 36 miles of public drive (including the old straight forest and departmental highways), 7 miles of ride, and 15 miles of walk. The larger part of the pleasure drives are 25 to 36 ft. broad, the widest 48 ft.; the rides 12 to 17 ft.; the walks 8 to 12 ft. The wood of Vincennes, similar in other respects to that of Boulogne, contained an ancient castle which was the centre of a great military establishment, and a large plain in the midst of the wood, used as a training ground. This has been maintained, but in other respects the design for improvement has been similar to that for the wood of Boulogne, the principal difference being that the accommodations and attractions for foot visitors at Vincennes are relatively more important. The extent of the ground is 2225 acres, of which about half is wooded. There is a racecourse on the plain, and a lake of 60 acres. The public ways, not including the racecourse, take up 183 acres. There are no large parks within the fortified lines of Paris, but several beautiful small parks and gardens. The extent of the public recreation grounds within the fortified lines of the city is about 250 acres. The area of suburban grounds commonly resorted to for recreation and maintained at public expense, not including those too far away for an afternoon excursion, may be estimated at 20,000 acres. The extent of pleasure drive maintained by the Municipal Government is 87 miles, being about 3 miles of roadway to each square mile of the city, or, counting the park-ways (boulevards) shaded and with asphalt driveways, over 7 miles to the square mile. New York has less than a quarter of a mile to the square mile.

London Parks and Open Spaces.

The parks and open spaces of London are very numerous, and their total extent is larger, perhaps, than that of those belonging to any other metropolis of the first magnitude.

They are very various in area, ranging from one to several hundred acres. It has been long recognised that London owes a great deal of its physical and political health to its parks and open spaces. All the year round they act as great lungs to the mighty city, while in summer, and even to a considerable extent in winter, they are the Sunday resort of the weary workers. The open spaces of London are not confined to any quarter. The East End has Victoria Park (300 acres); Finsbury Park (115 acres), too new to be so pleasant to the eye, but still rapidly becoming what it is intended to be; and the half-dozen "downs," "fields," and "commons" that go under the general name of Hackney Downs (50 acres). It has also, lying just outside its boundaries, the two forests of Epping and Hainault, and several green breadths that may be called everybody's and yet no man's land. South London has some of the finest of the parks and open spaces. To the south-east lie Woolwich Common, Greenwich Park (174 acres), and Greenwich Common, and nearer at hand Lewisham Common, Peckham Rye, and Southwark Park (63 acres). Directly south lie Camberwell (55 acres) and various little remnants of ancient greens and commons, while the grounds of the Crystal Palace may almost be said to answer as a park for the wide districts of Sydenham, Norwood, and Penge. South-west lie Clapham Common (10 acres), Wandsworth Common (302), and Wimbledon Common (628). Tooting Beck and Tooting Graveney Commons and Battersea Park (230 acres) also belong to this district. In the north lie Hampstead Heath (240 acres), the Greenlanes, the grounds of Alexandra Park (192 acres), and Primrose Hill. In the west are found Hyde Park (about 400 acres), the Green Park, St. James's Park, Regent's Park (450 acres), Kensington Gardens (290 acres), and several small "greens," such as Shepherd's Bush. All these parks, commons, and open spaces are within the actual metropolitan district. Taking in a little wider radius, the heaths, downs, parks, and greens within easy reach of London become almost innumerable. First, beginning at the south-east and sweeping round by the south, west, north, and east, we find Chiselhurst Common; a little south-west of this Hayes Common, a great resort of cockneys in summer, where any day a score of pleasure-vans may be seen; a little further to the west Addington Common, also much frequented; still further west Mitcham Common and Banstead Downs, not to speak of those of Epsom, famous for horse races, or of the score of small spaces kept "open" by the strong hand of the law and the general consent of the people. Approaching the Thames by a north-west course, we next meet with Richmond Park (2253 acres), the largest park near London except that at Windsor (3800 acres), Hampton Court Park and Bushy Park (1842), and Kew Park and Gardens (684), the finest botanic garden in England. Crossing the river, we come next upon Ealing and Acton Greens (leaving Hounslow Heath on the left as out of our radius), Wormwood Scrubbs, and numerous little greens and commons. North of Hampstead and Alexandra Park the open spaces are fewer and smaller, and owing to a more scattered population less required. North-east lie Epping and Hainault forests, mentioned before, each of them very large and full of natural beauty. Hyde Park, the most noted of the public grounds of London, takes its name from the ancient manor of Hyde, which at one time belonged to the Abbey of Westminster, became public property in 1535, was sold by order of Parliament in 1652, and again recovered to the Crown on the Restoration in 1660. It was originally of the usual character of English private parks, a broad piece of quiet pasture ground, with numerous great trees scattered over it singly and in groups and masses. In 1730-33, a body of water was introduced (the Serpentine), but with no care to give it a natural or even a graceful outline. Roads have also been formed in the park from time to time, less with a view to public pleasure-driving than for convenient passages. What is called Rotten Row (a corruption of the French *route du roi*) was originally the passage for the king and his cavalcade between Westminster and his palace of Kensington; it is a mile long and 90 ft. wide, has a surface of loose fine gravel, and is used by the public only on horseback; it is separated from the Serpentine and "Ladies' Mile," the fashionable drive of London, by a walk and strip of turf of variable width. It divides and overpowers what might otherwise be a pleasing landscape expanse, and no attempt has been made to mitigate the harshness of the invasion. Parts of Hyde Park have lately been made into gardens, and in these during parts of the summer there is a very brilliant display of flowers and sub-tropical plants; but the old trees are disappearing more rapidly than young ones are brought forward; the turf is not well kept, and to avoid its destruction in many parts iron hurdles are placed along the walks. It is thus gradually losing its beauty as a park, for which its streaks of fine gardening here and there offer no compensation. Regent's Park, formerly part of old Marylebone Park, was laid out in 1812. There is a drive of nearly two miles around it, and within are the Botanic and Zoological Gardens, and a lake. Victoria Park in East London was opened to the public in 1845. A fine drinking fountain, 60 ft. high and costing £5000, given by Lady Burdett-Coutts, was erected in it in 1862. St. James's Park was formed and walled in by Henry VIII., was much improved under Charles II., and was arranged as it now appears chiefly under George IV. The public property in many of the larger commons of London is so complicated by ancient manorial and local rights that its extent cannot be accurately stated. The aggregate area of the several public and crown parks that have been named, together with so much of the commons lying within the metropolitan district, as is under the Board of Works, is about 13,000 acres. There is also in the squares and gardens, most of which have been established by landlords, and are private property but of great public advantage, about 1200 acres. Liverpool and its suburb Birkenhead have six parks, five of which are recent acquisitions, and yet incompletely prepared for public use. The largest, Sefton Park, contains 387 acres. Birkenhead Park contains 120 acres, besides the leased villa grounds (60 acres) by which it is surrounded. It was undertaken as a land speculation, and, though too small in scale and too garden-like for the general popular use of a large community, is very pleasing, and is one of the most instructive to study in Europe, having been laid out and the trees planted under the direction of the late Sir Jos. Paxton, more than thirty years ago. The corporation of Leeds has lately purchased a noble park of 800 acres, containing a fine stream of water and a lake, formed by the previous owner, of 33 acres. Its scenery is diversified, and it commands fine distant rural views. These advantages and its exemption from injury by factory smoke compensate for the necessity the citizens will be under of reaching it by rail, its distance from the town being four miles. Birmingham, Manchester, Bradford, and other manufacturing towns of England have acquired parks by the subscription of citizens or by joint-stock companies. At Halifax a park has been formed and given to the town by a benevolent citizen. Derby is provided in the same way with an arboretum. The city of Lincoln is forming an arboretum on land purchased for this purpose. Most of the small towns of England have some place of recreation, as for instance, the old city walls and the river banks above the town at Chester, the common and the old castle grounds at Hereford, and the cathedral greens at Salisbury and Winchester. These consist in each case either of a long broad walk, pleasantly bordered and leading to fine views, or a few acres of smooth turf with shaded borders. Most villages in England have a private park near them, which people are allowed to use. When this is not the case, even a hamlet almost invariably has at least a bit of cricket-ground or common, where, on benches under a patriarchal oak or elm, the old people meet to gossip and watch the sports of youth. Phœnix Park at Dublin (1752 acres) is a fine upland meadow, fringed and dotted with trees, but badly laid out and badly kept, being much larger than the city requires or can afford to take suitable care of.

Continental Parks and Gardens.

The old towns of the Continent have generally provided themselves with recreation-grounds by out-growing their ancient borders of wall and moat, and glacis, razing the wall, filling part of the moat, and so, with more or less skilful management of the materials, making the groundwork of a garden in the natural style. This is done admirably at Frankfort, Leipsic, and Vienna. Elsewhere simple broad walks bordered with trees have been laid out upon the levelle parts. The principal promenade of Vienna is the Prater, th chief feature of which is a straight carriage-road over a mile long, with a walk on one side and a riding pad on the other. It contains near the town a great number of coffee-houses and playhouses; but, as it is five miles long, considerable portions are thoroughly secluded and rural. Before the recent improvements of the Bois de Boulogne, it was the most frequented large recreation-ground in the world. There are numerous other public grounds at Vienna, both urban and suburban. The English garden at Munich was laid out under the direction of Count Rumford by the Baron von Skell. It has serious defects, but its scenery in the English style has been considered more agreeable than that of any other public park on the Continent; it is about four miles long and half a mile wide. The Thiergarten at Berlin contains over 200 acres of perfectly flat land, chiefly a close wood, laid out in straight roads, walks, and riding pads; its scenery is uninteresting. The Prussian royal gardens of Sans Souci, Charlottenburg, and Heiligensee are all extensive grounds, the two former in mixed, the latter in natural style. Public grounds worthy of a traveller's attention exist at Cologne, Dresden, Düsseldorf, Stuttgart, Hanover, Brunswick, Baden, Cassel, Darmstadt, Gotha, Weimar, Wörlitz, Schwetzingen, Teplitz, Prague, and Hamburg. Coffee or beer-houses are important adjuncts of German public gardens. The refreshments furnished are plain and wholesome, and the prices moderate. Many families habitually resort to these for their evening meal, especially when, as is usually the case, there is the additional attraction of excellent music furnished by the Government. The gardens of Antwerp, the Hague, and Warsaw, and the "city grove" of Pesth, are also remarkable. The famous summer gardens of St. Petersburg are not extensive, being but half a mile long by a quarter of a mile wide, and formal in style. They contain fine trees, are rich in statuary (boxed up in winter), and are the most carefully-kept public gardens in the world, as shown in the exceeding freshness and vigour of the plants and flowers and in the deep vivid green of the turf. The more fashionable promenade of St. Petersburg is in the gardens of Katharinenhof, where, on the 1st of May, an annual procession of private carriages of almost endless length is headed by that of the Emperor. A remarkable garden is that of Tzarskoye Selo, in which is the residence of the Imperial family, about two hours' ride from St. Petersburg. Besides the palace, it contains temples, banqueting-houses, and theatres, a complete village in the Chinese style, a Turkish mosque, a hermitage, and numerous monuments of military and other achievements. But beyond this museum of incongruous objects there is a part in which there is natural and very beautiful scenery both open and wooded, and much of it is simple. The keeping of the ground employs 600 men. Stockholm has a great variety of delightful waterside rural walks; but the chief object of pride with its people is the Djurgard or deer park, which is a large tract of undulating ground about three miles in circumference, containing grand masses of rock and some fine old trees. The Haga park, also at Stockholm, is picturesque, and has the peculiarity of natural water communications between its different parts and the city, so that it is much visited in boats. The environs of Copenhagen contain many grounds of public resort, but the notable promenade of the city is the Royal deer park (Dyrhave). In all the Italian cities the chief public rural resorts are gardens attached to the villas of ancient noble families. The Cascine of Florence is an old pasture of the dairy of the former grand dukes on the banks of the Arno, passing through which are broad straight carriage-drives. It contains little that is attractive, but commands delightful views. At a space whence several roads radiate a band of music usually performs at intervals during the promenade hours. The Municipality is now preparing promenades and recreation-grounds, which promise to be of remarkable interest. The fashionable promenade of Rome has been on the Pincian Hill, which has few attractions except in its magnificent distant views. Since Rome was made the capital of the new kingdom of Italy, large public grounds in other quarters have been projected, and in great part formed by the Municipality. At Naples the fashionable promenade is the Riviera di Chiaja, a public street. It is divided into a ride, a drive, and a walk, and is nearly a mile in length with a breadth of 200 ft. A part of it is separated from the shore of the Bay of Naples by the Villa Reale, planted in the garden style. Most towns of Spanish or Portuguese origin are provided with a promenade of formal avenues, to which, generally at dusk, custom brings the ladies in open carriages and the gentlemen on foot or on horseback.

American Parks.

Until some years after the middle of the present century no city in North America had begun to make provision for a park. To a certain extent cemeteries were made to serve the purpose. In 1849 Mr. A. J. Downing began in the "Horticulturist" a series of papers which were widely copied, and did much to create a demand on this subject. At length a large tract of land was provided in New York, upon which in 1858 the preparation of the present central park was begun. The topography of the ground was in all important respects the reverse of that which would have been chosen with an intelligent understanding of the desiderata of a park. The difficulties presented could only have been tolerably overcome by an enormous outlay. The popularity of the parts of the park first prepared, however, was so great that the necessary means for improvements on a large scale were readily granted. The magnitude of the operations (nearly 4000 men being at one time employed on the works), the rapidity of the changes wrought, and the novelty of the scenes presented, soon gave the enterprise great celebrity; and the rapid rise in the taxable value of the land near it more than met the interest on its cost. An efficient management of its public use was maintained, and though frequented by great crowds of people it was found, contrary to general expectation, that a degree of good order and of social amenity prevailed, nowhere surpassed and rarely equalled in the public places of Europe. Philadelphia, Brooklyn, Albany, Providence, Baltimore, Buffalo, Chicago, St. Louis, Cincinnati, Montreal, and San Francisco have since each acquired land for one or more parks of considerable extent, the average being over 500 acres. As in the case of New York, the selection of ground has often been made more with reference to other considerations than to that of fitness for the intended use. Some are as yet only held for future use, while in others provisions essentially temporary and which will be in the way of substantial improvement, are made; none are so far complete and well fitted as fairly to illustrate the ends which a park should be designed to serve. The central park of New York is $2\frac{1}{2}$ miles long and half a mile wide, but this space is practically divided by the reservoirs of the city water works, which are elevated above its general level and occupy 142 acres. Deducting besides this certain other spaces occupied for special public purposes, the area of the park proper is 683 acres; of this, 55 acres are in meadow-like ground, 54 in smaller glades of turf, 400 of rocky and wooded surface, 43 in six pieces of water (the largest being 20 acres), 15 in riding ways, 52 in carriage ways, and 39 in walks. There are $5\frac{1}{2}$ miles of rides, $9\frac{1}{2}$ miles of drives, and 28 miles of walks. Omitting a few by-roads, the average breadth of the drives is 50 ft., and of the walks 13 ft. There are eight bridges (over water) and thirty-eight tunnels and subway arches, fifteen of which are concealed from view by plantations carried over them, and all of which are expedients for reconciling within narrow limits the large amount of foot, horse, and wheel room required with sylvan and pastorial landscapes. On the east side, near the middle of the parallelogram containing the park and reservoirs, ground is reserved for a great museum of art; and beyond its boundary on the west side another plot is held for a museum of natural history. The first block of each is now building. There are carriage and foot entrances at the two southern corners, and between them on the south end, at the termini of street railroads, there are two foot entrances; and fourteen other entrances are in use or provided for. From the S.E. or Fifth Avenue approach, which is most used, the visitor is led by a nearly direct course to a slightly elevated point in the interior of the park, northwardly from which, at great cost in reducing the original rocky knolls, broad green surfaces have been prepared, and views of a tranquil landscape character obtained of considerable extent. At the most distant visible point a small tower of grey stone has been built to attract the eye, and the perspective effect is aided by the character and disposition of the foliage, and especially by an avenue of Elms leading toward it. At the end of this avenue, termed the Mall, the ground falls rapidly to the arm of a lake, and here a structure called the Terrace has been introduced, which, though mainly below the general plane of the landscape and unobtrusive, supplies a considerable shelter and place of reunion. It is designed to be richly decorated with sculptured works. On the opposite side of the water is a rocky and wooded slope threaded by numerous paths, called the Ramble. These with the green playground reserved for the scholars of the public schools, two irregular bodies of water, and several rocky knolls (on one of which is the Kinderburg, a place for little children), form the chief features of the south park. Those of the north are a central meadow divided by a rocky spur, the high wooded ground beyond it with a steep rocky face on the north, and an intermediate glen with a chain of waters. The number of visits to the park sometimes exceeds 100,000 in a day, and is about 10,000,000 a year. Prospect Park, Brooklyn, N.Y., contains, with the adjoining parade ground, 550 acres. There is included in it a considerable amount of old wood, and for this reason, and because of the better soil, climate, and early horticultural management, it has a finer rural and more mature character than the New York Park, though its construction was begun eight years later. It has about 6 miles of drives, 4 miles of ride, and 20 miles of walks. Its artificial water covers a space of 50 acres, and is supplied from a well by a steam pump. It commands a fine view over the ocean. There are thirty-three smaller public grounds in New York and Brooklyn, all but three of which are improved and in use, the total pleasure ground space of the two cities being 1600 acres. Fairmount Park, Philadelphia, is a body of land 2740 acres in extent, having a great variety of surface, all of it of considerable natural beauty. The heights command fine distant prospects; it bears many noble trees, and at the part most remote from the city there is a glen through which dashes a charmingly picturesque stream. It is divided by the Schuylkill river and crossed by a common highway, and in two directions by railroads, the cuttings and embankments of which unfortunately completely break the naturally most quiet scenes. These, with other structures, some of which have been recently erected and are designed to be permanent, greatly disturb its natural beauty. The object of the city in acquiring the ground was to control it against such occupations as would peril its water supply, and its permanent disposition is not fully determined. Appropriations have been already made for two large reservoirs, for pumping works and for a zoological garden. No measure has yet been taken looking to the permanent preservation or special preparation of any considerable part distinctly as a park; but drives, rides, and walks have been formed, mainly temporary, by which all parts are traversed or laid open to view. Several houses which were originally private villas are used as refectories; the river is well adapted to pleasure-boating; the spaces are so large that few restrictions on the movements of visitors are necessary; and in spite of the defects to which allusion has been made, the ground offers better and larger opportunities for popular rural recreation than are possessed in a single property by any other city in the world. Druid Hill Park, in Baltimore (600 acres), is a very beautiful old wood, acquired by the city in 1860, the original private improvements of which have been enlarged and extended for public use. Buffalo is forming the most complete system of recreation-grounds of any city in the United States. It will consist of an inland suburban park of 300 acres, of very quiet rural character, with an ample approach from the centre of the city, and park-ways 200 ft. wide extending from it in opposite directions, one to a promenade overlooking Lake Erie, the other to a parade-ground and a garden on the opposite side of the town. There is a fine natural growth of trees in the main park, a lake of 46 acres has been formed, and several miles of fair macadamized roads and walks constructed, together with various suitable buildings. The work was commenced in 1871, and has been advanced very steadily and economically. The aggregate area of ground occupied, including the park-ways, is 530 acres. Chicago is situated in a region most unfavourable to parks, and should she ever have any that are deserving the name, it will be because of a persistent wisdom of administration and a scientific skill as well as art in the constant management of those which she is setting about, such as has been nowhere else applied to a similar purpose. The grounds appropriated are flat, poor in soil, and devoid of desirable natural growth, or, except two which look upon Lake Michigan, of any natural features of interest. In one it is proposed to transform a series of marshes, partly overflowed by high water of the lake, into lagoons, the quiet water-surface of which is designed to take the place ordinarily given to lawns in sylvan landscapes; this, if the idea be consistently carried out, will be unique and interesting. The Chicago Park system contains nearly 1900 acres of land, in six parks, of an average extent of 250 acres each, three in one chain, and all, with one exception, connected by park-ways. About twenty miles of park-way, from 200 to 250 ft. wide, has been laid out (in the city and suburbs), nearly half of which is already provided with good macadamized or concrete roads and well planted. St. Louis now controls 2100 acres of lands held for recreation-grounds, of which about 100 are in city gardens, the greater part improved and in use, and the remainder suitable for parks proper, the smallest field being of 180 acres, and the largest of 1350. Of the latter, one only, Tower Grove Park, containing 277 acres, is yet at all adapted to use. A park-way 120 ft. wide and 12 miles long is under construction. Cincinnati has a little over 400 acres of public recreation-ground, 207 being in Eden Park, which lies on undulating ground commanding fine distant views, and 168 in Burnett Wood, which has a similar surface with a fine growth of indigenous trees. There will be about three miles of pleasure road in each. Cincinnati possesses in Spring Grove Cemetery the best example in the world probably of landscape gardening applied to a burial place; and her parks are likely to be improved with the same taste and skill. San Francisco holds 1100 acres of land for recreation-grounds, of which over 1000 acres are in one body, called the Golden Gate Park. This borders on the ocean, and is very bleak and partly covered with drift sand; no trees grow upon it except in an extremely dwarfed and distorted form, and turf can only be maintained by profuse artificial watering; but wherever shelter, fertility, and sufficient root moisture can be secured, a low, southern, almost sub-tropical vegetation may be maintained throughout the year, of striking luxuriance and beauty. Experiments in arresting the sand and forming a screen of foliage on the shore have been made with promising success. If steadily, boldly, and generously pursued, with a cautious humouring of the design to the unique natural conditions, and skilful adaptation of available means, a pleasure-ground not at all park-like, but strikingly original and highly attractive, may be expected. Nearly seven miles of the ground have already been formed into a carriage road, which is much used. A park-way stretching three miles along the shore is provided for, the reservation for it ranging from 200 to 400 ft. in breadth.—"Appleton's Cyclopædia."

The "Picturesque and Beautiful."—In the excellent "Transactions" of the Massachusetts Horticultural Society just received, we find, among many interesting articles, a long paper on "Landscape Gardening," the effect of which is greatly marred by a discussion on the old and vain definition of the "beautiful" and the "picturesque," &c. There are certain things in books which mainly serve as a clog to progress or healthy discussion, and the feeble and incomprehensible drivel about the "picturesque," the "beautiful," and the "gardenesque," is certainly as mischievous as anything we know of. The object of landscape-gardening artists or essayists is or ought to be to make our gardens beautiful, varied, and natural; and it is sad to see a number of people wasting time in defining the indefinable and separating the inseparable. Writers on this subject should go straight to the point, not dallying with terms, and tell us (if they can) how to make our gardens more natural and satisfying at all seasons—how to drive the long-lived and stupid geometry out of them, as having no more legitimate place therein than in a picture—how, in fact, to arrange the garden that it may be attractive to all men of taste or feeling, as well as to the professional horticulturist.

Royal Horticultural Society.—A circular has been forwarded to the Fellows of the Society stating that the Council, being desirous of extending a knowledge of practical horticulture, contemplate the foundation of lectures and demonstrations on the subject. Their intention is to have lectures delivered by properly-qualified instructors, in the Society's Hall, at South Kensington, and to give practical instruction in the garden at Chiswick.

NOTES OF THE WEEK.

—— Camellia Count Nesselrode is in great beauty now, and serves to show the great improvements that have lately been made in different varieties of this noble plant. It has flowers of a delicate rose colour, with a distinct white line margining each petal. There is a good plant of it in the Camellia house in the Royal Exotic Nursery, Chelsea.

—— The new Phalænopsis Mannii is now in flower in Mr. Heriot's collection at Cholmondeley Park, Highgate. It has yellow flowers about 2 in. in diameter, the sepals and petals being conspicuously blotched and spotted with rich brown. The lip is very singular, the lateral lobes being erect, white, streaked with purple, while the central lobe is lunate and fringed. This species is far prettier than its allies P. fuscata and P. cornucervi.

—— The first annual report of the Chicago Botanical Garden has been published, giving an account of the progress of this undertaking. The Garden is located in the South Park, Chicago, where 2½ acres have been laid out in beds for the temporary reception of hardy plants. A plan has been prepared for the permanent arrangement of the entire ground.

—— From a Parliamentary Return lately issued we glean the following details relating to the quantity of land cultivated as orchards market gardens, nurseries, and woods in Great Britain. The grand total in acres is as follows:—Orchards, 154,584; market gardens, 38,957; nursery grounds, 12,042; woods and coppices, 2,187,078.

—— A fine plant of the rare Dendrobium Wardianum is now in bloom in Messrs. Veitch's collection at Chelsea. It is one of the best coloured varieties we have yet seen, the magenta tips to the ivory-like sepals and petals, as well as the large crimson blotches of the lip, being very rich and distinct. The rare Cattleya Veitchii is also showing flower, and is expected to open in a few days.

—— In Missouri last year, after the locusts had eaten down the "Blue Grass" so closely that the greater part of it died, cultivators were agreeably surprised to find its place taken by a plentiful growth of an annual Grass (Vilfa vaginæfolia) heretofore unknown to them. The seeds of the new Grass had been supplied by a moderate number of plants, year after year, in sufficient quantity to secure a good crop, had they not been choked and kept down by the greater vigour of other and stronger plants.

—— Mounds of earth are now being raised on the south side of the Serpentine in Hyde Park. They are set up in spaces between the fine old Beech and Elm trees in such positions that, with the aid of the latter, they will, when they are planted, form a screen between the Serpentine and Rotten Row. From a landscape-gardening point of view, this is to be regretted, as the gentle slope to the water was better than the kidney-shaped mounds. These, like many others too often seen in gardens now-a-days, are not formed so as to harmonise with the surrounding ground: their slopes are too abrupt, there are no gentle gradations.

—— In the planting of street trees—a practice happily becoming more common—there are many mistakes being made. One of the most usual errors is planting trees too large for the positions in which they are placed. Thus, on the well-managed Pembroke property, to the south of Dublin, many Wych Elms are planted, and, though young, they are too large for the streets, and they have recently been lopped in the most barbarous and ignorant manner. It is easy to adapt the tree to the width of the thoroughfare. The common Acacia is a very good tree for streets that are not very wide, and there are various others, medium-sized and pyramid trees, that ought, for ordinary streets and roads, to be preferred to the giants of the forest.

—— The Commissioners of 1851, says the "Pall Mall Gazette,', are never weary of doing kindnesses to that interesting mendicant' the Royal Horticultural Society. The Council have apparently shrunk from the work of going round in person to solicit subscriptions, and a species of begging-letter has been prepared and lithographed, and entrusted for distribution to a professional canvasser. That the Council should prefer doing this unpleasant part of their business by deputy is natural enough; the curious part of the transaction is that the canvasser is a servant of the Commissioners of 1851. These tender-hearted landlords first let trust property at a nominal rent to certain residents in South Kensington, then excuse them from paying this nominal rent, and finally, when it becomes impossible to do this any longer, lend one of their clerks to their defaulting tenants to solicit aid in the neighbourhood towards making up the rent. Everybody must be pleased with this arrangement, with the exception of the paltry interests—science, art, and so forth —which used to dream that they were to be benefited by the surplus proceeds of the Exhibition of 1851.

—— A Mr. Spitze has found in working a stone-quarry near La Prairie, in Adams Co., Ill., both stalks and ears of Indian Corn, of full size and perfect in appearance, in a petrified condition and imbedded in a stratum of sandstone, 4 ft. in thickness. This is said to be good evidence that this plant was extensively cultivated in America before the appearance of the white man.

—— The Strawberry Colonel Cheney is very highly spoken of in America, and is said to be good for all soils and all parts of the country. Some say it beats the long-famed Wilson, hitherto one of the best of American Strawberries.

—— Last year's vintage in France has now been ascertained in round numbers to have been 84,000,000 hectolitres; taken at 1s. a gallon, there is a result of astonishing millions, showing how the German demand of "money or your life" was paid off.

—— An Order of the American Centennial Exhibition managers fixes the date for the exhibition of various products of the garden thus—Pomological products and vegetables, May 10; Strawberries, June 7 to 15; early summer vegetables, June 20 to 24; Raspberries, July 3 to 8; southern pomological, July 18 to 22; Melons, August 22 to 26; Peaches, September 4 to 9; northern pomological, September 11 to 16; autumn vegetables, September 19 to 23; Potatoes and feeding roots, October 2 to 7; Nuts, October 25 to November 10. These will be exhibited in a building erected for that purpose. This list comprises only the most important.

The Architectural Gateway a Mistake.—Is not this generally speaking, a pretentious mistake? not certainly in an old keep or castle, where there is a reason for its existence, and where it is part and parcel of architecture that has a use and a meaning; but the modern architectural gateway, a mile or two from the house or perhaps any other structure bigger than the lodge, and flanked by low hedges or a wooded fence is, like a boat on a highway, a little out of place. It is, in fact, one of the minor humbugs of architecture, and I should like to caution landscape gardeners against encouraging the fashion. Better, many times, use a simple railed gate.—V.

Children Poisoned by Water Hemlock.—Several children have been poisoned at Stockton-on-Tees, and two have died. It appears that a man named Kindler found some roots which he thought were Parsnips. These he put into his pocket. By some means, not yet explained, portions of the roots were eaten by several children, who became ill, showing symptoms of poisoning. On the one hand, it is stated that the children must have taken the roots from Kindler's pocket, while on the other it is asserted that he gave them the poisonous herb, which is said to be Water Hemlock. Kindler is in custody.

NOTES AND QUESTIONS—VARIOUS.

Distilling the Odours of Flowers.—Will any of your readers kindly tell me through The Garden, how to distil the fragrant essence of Roses, Violets, and other flowers? I should like to know if there is any machine that could be used for the purpose on a small scale.—F. W. C.

An Orchard Country.—It is estimated that within a radius of two miles at La Salle, Niagara County, N.Y., there are 82,000 fruit trees growing. Of these, 37,300 are Apple, 42,400 Peach, 1800 Quince, 3000 Pear, and 500 Crab Apple trees.

The Coca Leaf.—I should be glad if you could inform me where the leaves of the Erythroxylon Coca could be procured, as I wish to make some experiments with them.—Edwin W. Gery. [Coca leaf may be obtained from Hooper & Co., 24, Russell Street, Covent Garden, W.C., at the rate of 1s. an ounce.

The Nettle as a Vegetable.—Loudon speaks very highly of the Nettle, either as a pot-herb for soups or for dishes like Spinach, and gives a plan for blanching it in the same manner as other plants. He says:—"We have known the Nettle forced by being planted close to the flue in a vinery, so as to produce excellent Nettle-Kale and Nettle-Spinach in the last week of January."

Myosotis dissitifolia in Pots.—Owing to the tendency this plant has to acquire green-fly or to damp off, if potted early it is advisable to lift it into pots as just as the flower-buds are visible,'and if then placed in a cool airy house it will be a mass of flowers. For indoor use 48-sized pots are best, but for a conservatory a fine effect is obtained from large plants in 24,sized pots.—A. D.

Frost v. Apricot Blossoms.—We have had severe weather for March. On the 19th we had 9° of frost, with snow and hail; on the 20th, 8°, and a clear day; on the 21st 8° and snow. Apricots are in full bloom; ours are protected with Frigi Domo, and are all safe; on trees not protected all expanded blooms are destroyed.—David Lumsden, *Sleaford.*

Cut Roses at South Kensington.—In your issue of Saturday last credit is given for the exhibition of one box of Roses to the new firm of W. Paul & Son. Will you kindly correct this and oblige us.—Paul & Son, *Cheshunt.*

Ben Davis Apple.—Will any of your readers kindly tell me if this Apple in cultivation in this country; and if so, what is its character?—J. W.

No. 228.] SATURDAY, APRIL 1, 1876. [Vol. IX.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

BILLBERGIAS.

Among these South American Bromeliaceous plants, are some splendid flowering subjects, which in general habit partake somewhat of the character of the Pine-apple; and, as in the Pine, their flower-spikes, are emitted from the centre of the plants, but they differ considerably in the forms which they assume, some being quite erect—as in the case of the Thyrse-like Billbergia (B. thyrsoidea), the flowers opening almost on a level with the intense crimson bracts from which they spring, forming a dense head of splendidly-coloured inflorescence. In others, like the Morel Billbergia (B. Moreliana), the flower-spikes are loose and open in character, and droop elegantly from the centre. Others, again, like B. polystachya (the many-spiked Billbergia), have erect spikes, but somewhat branched. All the Billbergias are easily grown, being sufficiently similar in their requirements generally to succeed under the same treatment. After they have flowered, they throw up suckers from the base; these should not be taken off too soon, as, although they will root when removed in a small state, they nevertheless make much quicker progress upon the plant which has produced them, until they get to a moderate size, say one-fourth or fifth of that of the parent plant. When taken off at that stage they root quickly, and sustain little or no check. They will throw out roots at any time of the year, but it is generally the best to take them off early in the spring, say about the beginning of March, as in that case they have plenty of time to get established before autumn; they should be slipped off from the stools that have produced them just at the point from which they spring, and any that are near the soil will most likely have some roots attached to them, in which case they may at once be placed in pots just large enough to hold them. Others, that have not made any roots, should have a few of the bottom leaves stripped off and put in pots, one-fourth filled with drainage; the soil in which they are grown should be good turfy loam, to which as much sand has been added as will keep it porous; insert the suckers well up to the leaves, pressing the soil down firmly, and do not give any water for some days, or it will make the soil too wet; place them in a house or pit in which there is a night temperature of 60°, and 6° or 8° higher in the day; if they can be accommodated with a bottom-heat of 80° they will root quicker than they otherwise would do, but do not confine them in a propagating-frame or under glasses, as is done in the case of cuttings, for, if too humid, they are liable to rot. In the course of a month or so they will have made roots, when the temperature may be from 70° to 75° at night and 10° higher by day, air being given when required. By midsummer they should be in a fit condition for shifting into pots a size larger than those they are in, but none of the family should be overpotted, as they do not like more soil than the roots can fully occupy. Let them have a light situation, but during summer they will require a thin shade in sunny weather. Supply them regularly with water as it is required, and syringe them overhead in the afternoons during the season of active growth; continue this treatment until the beginning of September, when they will not need further shading, and syringing may be also discontinued. The temperature may now be reduced 5° day and night, and by the middle of October it may be allowed to fall to 60° at night, a point at which it may be kept throughout the winter, during which they will want less water but should never be allowed to get too dry. In spring, as the days lengthen, raise the temperature a few degrees; by the beginning of May the roots will be in an active condition, and the plants should be moved into pots a size larger than those they are in, using the soil in a similar state; if a few bits of crocks or charcoal be added it will ensure the roots keeping healthy, as they dislike anything of a sodden impervious character. As the season advances increase the temperature to the same height as it was during the previous summer, and give air as before, shading when requisite. This season the plants will, if all goes on well, make strong growth, and some of them may need a second shift in July, *i.e.*, if the pots are well filled with roots, but, unless that is the case, do not move them. To such as evidently require more room give pots 2 in. larger than those they were in, after which encourage them to make all the growth possible by giving them plenty of heat and light, as the stronger the plants the finer will the flowers be. In autumn again reduce the temperature, and treat them through the winter as during the preceding one. They will not require re-potting in spring, but in everything else they should be managed as already recommended, and they will throw up their bloom-spikes during the spring and summer. When in flower, move them to the coolest end of the stove, or to an intermediate house, if such is available, in which a drier atmosphere is maintained. Thus situated, the flowers will last longer than they otherwise would do. After blooming, they should be kept in the stove, and treated in every way as hitherto; for upon the attention which they get will depend their ability to produce suckers quickly, and in such condition as will grow up to a flowering size in the least time. After the first suckers are removed, the old plants, if well cared for, will throw up more, which may either be taken off and rooted singly, as already described, or they may, if large specimens be wanted, be allowed to remain on the old plant. These, if shifted into larger pots, and grown on, will make flowering crowns in one season. The following are a few of the best kinds which will form an acceptable addition to any collection of stove plants, as even when not in flower, they have a distinct and handsome appearance. B. Moreliana is not only one of the best of Billbergias, but also one of the most beautiful of the whole Bromeliaceous Order; it is a native of Brazil. Its leaves, which grow to a considerable length, have a lively green ground colour, banded with white; its flower-spike being drooping and very graceful. B. Saundersii is a stout-growing species, with strap-shaped leaves, 10 or 12 in. in length, spined on the margin, the under surface being of a purplish colour, and covered with light-coloured blotches; the flowers are produced in half-drooping racemes about 12 in. in length, furnished with long crimson bracts; the calyx is crimson; the corolla deep blue, and the anthers orange. It has been recently introduced from Bahia. B. thyrsoidea has bright green leaves, with small spines on their edges, blunt at the point, and slightly reflexed; bracts, rich crimson, forming an oblong, obtuse cone; flowers, similar in colour to the bracts, close and erect. B. polystacha has leaves furnished with strong spines and an erect spike. The bracts are small and reddish crimson, the flowers purple. It comes from Brazil. The Iris-leaved Billbergia, B. iridifolia, is a handsome species, with blue and yellow flowers. This and the preceding come from Rio Janeiro. Billbergias suffer little from red spider, thrips, or aphides, inasmuch as the hard texture of their leaves does not suit their tastes; but scale, both white and brown, thrive upon them, and must be removed by means of the sponge. Mealy bug will also live on them, and should be removed by laying the plants on their sides and syringing them with sufficient force to dislodge the insects. T. Baines.

The Size of Wire for Garden Walls.—I shall be obliged if you would kindly give your opinion as to the use of No. 14 galvanised wire for wiring walls on which Peaches and Nectarines are to be trained. There appears to exist in the minds of some a difference of opinion as to its being strong enough for the purpose, especially in the case of old trees.—M. H. [For strong old trees a size or two larger would be better, but as trees on walls are frequently not of this character the size named is usually sufficient. In French gardens, where this wire is much used, erect rods cross the horizontal wires, and on these upright rods, held in position by the wires, the erect branches of the trees are frequently trained. It is well to bear in mind that training young trees on the wires is very different from forcing old branches to assume a new position on slender wire.]

Fruit Prospects.—I am happy to be able to report that our prospects for a fruit crop are still favourable. The thermometer fell on two occasions last week to 21°, but Peaches and Apricots, are, I think, quite safe under Brittain's netting, and similar protective contrivances. But what a month of storm and wind it has been! Living beside the Fens is, as regards exposure, worse than the sea-side.—C. Hobday, *The Gardens, Ramsey Abbey.*

VEGETABLES AND FRUIT IN CONSTANTINOPLE.

The cultivation of vegetables and fruit in Constantinople, like every other species of culture in the unhappy country of which it is the capital, is carried out on the most primitive and unscientific principles. The system of horticulture pursued by the natives (under which head I include the whole of the heterogeneous mass of races constituting the Ottoman Empire) is convenient and inexpensive, inasmuch as it consists in little more than allowing things to grow in their own way. Melons, Egg-plants, Grapes, Figs, Cauliflowers, and one or two other useful fruits and vegetables which in that favoured climate almost grow of their own accord, are all super-excellent; but those members of the fruit or vegetable kingdom that require a degree of attention and experience, such as Peaches, Plums, Carrots, or Potatoes, in fact, anything that cannot be left to shift for itself during the best part of the year, yield a result that may be readily guessed at.

The causes of this apparent apathy on the part of the market-gardeners of Constantinople and its neighbourhood are not far to seek. The City of the Sultan has long since earned the well-merited reputation of being the head-quarters of extremes and anomalies of every description; it can hardly be wondered at, therefore, that the "Gate of Felicity," as the Osmanlis affectionately term their capital, should frequently be the victim of meteorological irregularities of no common order. These eccentricities on the part of the "Clerk of the weather" can readily be accounted for if we consider the geographical situation of Constantinople. A reference to Keith Johnston will show us that Constantinople is nearly on the same parallel of latitude as Naples, Barcelona, and Oporto; but far away on the northern side of these cities, as for instance at Mentone and Nice, we find the Olive, the Orange, the Lemon, the Prickly Pear, the Palm, and half-a-dozen other semi-tropical plants increasing and multiplying, while, with the exception of the Melon and the Pomegranate, there is but little difference in kind, at any rate, between the vegetable productions of Constantinople and those of Fulham or Charenton. Another glance at the map of Europe will reveal the cause of this apparent anomaly, and show the reason why Constantinople does not act up to its latitude. If we draw a straight line from the centre of Stamboul to the North Pole, we shall hardly meet with a chain of hills 1000 ft. high along the whole of the 49°. Consequently the wintry northern blasts, sweep down upon the Bosphorus and its neighbourhood with almost polar severity; and were it not for the warming effect of the Black Sea and the slight amount of shelter afforded on the north by the low hills which form the tail of the Little Balkan range, Constantinople, during the first three or four months of the year, would be a very good imitation of Moscow or St. Petersburg. If we take the mean winter temperature as determined by Professor Berghaus, of Berlin, and MM. Coumbary, Ritter, and Lyne, of Constantinople, we shall find it lower than that of the south-west of Ireland and Cornwall, and closely approximating to those of London and Paris. The mean of the whole year approaches that of the centre of France, while the summer mean is higher still, placing Constantinople on a level with central Italy and Spain. Autumn and spring can hardly be said to exist as seasons, for summer is no sooner ended than winter begins, and the change from winter to summer is effected with all the celerity of a transformation scene in a pantomime. An instance of these sudden changes will suffice. One Wednesday towards the end of last April I crossed the wooden bridge from Stamboul to Galata, and although I was well great-coated and comfortered, the northern blast which was blowing in my face was so keen that my cheek-bones ached with the cold. On the Sunday evening after I sat out on the open terrace on the top of a friend's house, drinking tea and chatting in the balmy moonlit air until nearly midnight. Added to all this, the winter, though short, is late, and the summer is long, hot, and dry, it frequently happening that not an inch of rain falls for six months. Your readers will, therefore, readily understand that the difficulty of growing ordinary European fruits and vegetablesis by no means slight. In addition to this, the supply of water, whether from natural or artificial sources, is of the meagrest description. Night dews during the summer are unknown, and the soil being very porous and light, the effects of the few showers that do fall are transitory. With the exception of the few plants I have mentioned, all the others require the greatest amount of care and attention. With plenty of warmth and protection during the winter, and water and shading in summer, as good Peaches and Apricots can be grown, and are grown, in Constantinople, as in England or France, but, except among rich amateurs, all this care and attention are wanting. The gardeners attached to the English, French and Russian Embassies, the palaces of the Sultan, the ministers, and others have abundantly proved that the fickle climate of Constantinople may be conquered by perseverance and experience, but, in addition to these two important qualifications on the part of the horticulturist and his assistants, a third is wanted on the part of the proprietor —a well-filled purse. This being the case, it may seem strange that no capitalist has yet been found to carry on market-gardening and fruit-growing on the same scale as in England and France, but the mystery is easily solved, and is to be sought for in the single word "cheapness." A native of the Sultan's dominions, be he Turk, Greek, or Armenian, cares but little about the quality of a product so long as it is cheap or even apparently so. Offer him hard unripe Peaches, or half-rotten Tomatoes, say at 1d. per pound, and he buys readily enough after the customary amount of higgling; but improve the quality tenfold, and ask him double the price, he either offers you half or turns on his heel, with the idea that you take him for a fool or a Frank—terms of equal signification in his eyes. Hence there is no stimulus for the fruit-grower or the market-gardener to produce good fruit or vegetables at a heavy outlay for labour and plant. If by letting his Peaches, Plums, and Pears grow at their own sweet wills, he can sell them ten days before they are ripe at what he calls a good profit, why should he be expected to spend money, time, and labour in producing fruit which he could not sell at all?

The above is no imaginary example, but is the result of a conversation I had last year with an intelligent Greek farmer, who, having read in a French gardening book that the proper way of growing Peaches was to prune the trees carefully, and train them against the wall, forthwith adopted this principle, instead of allowing his Peach trees to grow like Holly bushes. The first year his Peaches were burnt up; the second he shaded them during the hottest season, and produced excellent results, as far as the fruit was concerned, which had only one fault—it was unsaleable because it was too dear; the third year, therefore, he threw down his walls, and went on growing Peaches in the old way. After what I have said, it is scarcely necessary to remark that hot-house produce would never find a sale in the market, and that such things as forced vegetables or fruits are utterly unknown, any tendency in this direction manifesting itself in an overweening desire to turn fruit into cash at the earliest possible moment, the consequence being that a really ripe Peach or Plum is a rare commodity. But it is time to speak of matters of detail.

The growing of vegetables, fruits, and flowers in and around Constantinople is carried on principally by Bulgarians and Albanians, these two closely-allied sections of the Sclavonic race having apparently constituted themselves the tillers of the soil throughout Turkey in Europe and the northern parts of Asia Minor. A Bulgarian or Albanian who has served his easy apprenticeship to gardening, either in town or in the provinces, generally manages to save a few pounds by the time he is one or two-and-twenty, for both are thrifty, sober, and plodding specimens of the human race. He forthwith rents a piece of ground, possibly from his former master, and commences business for himself in a small way. If he be poor, he rents a cheap plot in some hot and dry situation in the centre of a valley exposed to the sun, or on the side of a hill having a southerly aspect, in order to grow Melons, Egg-plants, Tomatoes, and other produce which cost a mere nothing in money or attention for their culture, and which always command a ready sale. If, however, his pockets be more warmly lined, he hires a plot in some of the numerous alluvial valleys with which the neighbourhood of Constantinople abounds, with a share in the neighbouring well, and builds himself a shanty about as large as a good-sized dog-kennel. He then sets to work to grow Lettuces, salads of various kinds, Artichokes, Cauliflowers, Onions, and possibly Apples, Pears, Peaches, and Cherries, all of which require coolness and moisture. As soon as his crops have nearly come to maturity they are bought at a low rate by some usurious Greek, Armenian, or Jew, who has possibly advanced him the money for his few tools and seeds at an exorbitant rate of interest, and who again sells, of course at a large profit, to the costermonger or greengrocer. This system, however, is falling into disuse near the capital, and the custom of letting and sub-letting is slowly disappearing. Although but little general improvement seems to be taking place in the system of cultivation for the reasons stated above, large holders growing and selling their own produce are on the increase. For instance, a Turkish friend of mine, a staff officer, inherited a portion of an alluvial valley not far from the Black Sea entrance to the Bosphorus. It struck him that, as it already produced a fine crop of Grass, it might grow other things of a more useful nature, and, as there were no cattle or sheep in the neighbourhood that could graze upon it, might be turned into a market garden. Being, like most Osmanlis, of a cautious nature, he began by clearing a few rods and sowing Lettuces and Cabbages, which succeeded so well that he at once sank a well and commenced operations as a market gardener. Being, like many of the modern Turks, a firm believer in everything French, he sent to Paris for all the best works on vegetable and fruit culture, and set to work in good earnest, and on proper principles. The common produce he disposes of at a good profit in the neighbourhood, and the more choicely cultivated fruit and vegetables to the numerous rich Beys and Pashas with whom he comes in contact in his official position, such traffic not being at all looked on as *infra dig.* on the part of a Turkish officer bearing the rank of staff-major. The first vegetables that claim our attention are those belonging to the Melon, Vegetable Marrow, and Egg-plant classes. These are numerous in variety and excellent in quality; and with Grapes, Olives, and baked or boiled Maize, form the staple food of the lower classes for at least nine months out of the twelve. They mostly possess the valuable qualification of growing almost anywhere, and of producing a good crop with a minimum of attention. I have tasted excellent Water Melons which had sprung up quite spontaneously on a heap of brick rubbish, the remains of a fallen wall.

The Melon trade of Constantinople is a peculiar one. About the beginning of August every scrap of waste ground in the more populous parts of the capital is let by the Municipality to the Melon sellers, and the erection of wooden shanties of the most fragile description immediately commences, which serve for store, shop, kitchen, parlour, and all. If the buyer wish to consume his purchase on the premises, he is accommodated with a stool, and when he has finished his Melon he can order a small cup of black coffee and the customary glass of water from the nearest café. The Melon seller is generally a picturesquely clad Greek or Armenian from the shores of the Sea of Marmora, who undertakes to sell the produce of his particular district, which is shipped to him from time to time while the season lasts. On the other hand, many Melon vendors dispose of their own produce, or simply buy in the open market. Immense quantities are also disposed of by the native costermongers whose name is literally legion, Constantinople being the paradise of street-sellers of all descriptions. The Water Melons seem to be of only one variety. They are generally "round like an Orange and a little flattened at the poles," and of an even fresh green tint, but sometimes streaked or speckled with lighter or darker markings. They vary in dimensions from those of a racket ball to those of a large football. The flesh is of a reddish-purple hue in the centre, shading off to greenish-white at the circumference, with dark purple or black pips. They are generally eaten without any condiment, but a dash of pepper is a good preservative against after consequences. In rich Turkish houses they are cut in slices and frozen in an ice-pail, and, as may be imagined, form a most refreshing morsel in the hot weather. The sweet Melons are most various in size, shape, colour, and flavour. The finest are undoubtedly those grown at Cassaba, near Smyrna, which are, of course, correspondingly dear, and being dear are scarce.

Vegetable Marrows, too, vary in size and shape from a small variety of about the dimensions of Inspector Bucket's fat forefinger to the Chio species, which often grow to the length of 6 ft. or 7 ft., and 2 in. or 3 in. thick. When peeled, cut into lengths 1 in. or 2 in. long, and stuffed with force-meat, boiled, and served with white "sauce piquante," they form a delicious dish. The seeds are hard and indigestible even when young, and are always scooped out and thrown away. Our own varieties of Vegetable Marrows are good and cheap.

There are two kinds of Egg-plants—one the ordinary Aubergine of the South of France, which is used in enormous quantities for stews and as an ingredient in meat stuffing, of which there are fifty different kinds; and another, somewhat resembling a stonemason's mallet, which is apparently much relished when fried in slices. These two varieties of the Egg-plant are confused by the Turks under the common name of "patlijan," a corruption of the Persian word "badinjan," which means the "soul of wind," an epithet conveying an exact idea of the effects which these vegetables have on those who are not accustomed to them. Next comes the Tomato, which was introduced from Southern Europe some three centuries ago under the name of "frenk patlijan," or Frank Egg-plant. It also is used in enormous quantities, being one of the cheapest of cheap vegetables. Last summer being unusually hot and dry, Tomatoes were very plentiful, and were selling in the streets of Stamboul at 10 paras (less than a halfpenny) per oke, *i.e.*, 2·83 lbs. There is also an immense consumption of Artichokes, which truly merit the name of "delicious Thistle" bestowed on them by old Evelyn. They are generally boiled and eaten cold, with oil and vinegar, and are a great Lenten dish with the Greeks and Armenians. During the spring, and indeed all through the summer, Cos and other kinds of Lettuces are most abundant; but to any one accustomed to London or Paris salads, they taste flabby and leathery. Cabbages and Cauliflowers are excellent, particularly the latter. Carrots, Turnips, Radishes, and Parsnips are all small and woody. Onions and Leeks are super-excellent, especially the former, which are peculiarly delicate in flavour. The "bamia" (Hibiscus esculentus), or Gombo, as it is called in the West Indies, is largely cultivated. It resembles in size and shape a five-sided tenpenny nail, and is largely used as an ingredient in soups and stews. Owing to its gelatinous nature, it is not much relished by Europeans. It is also plucked young, when about half-an-inch long, and dried for winter use. Peas and Beans are fairly good. A species of Pea, which is gathered young and stewed in the pod with meat is excellent in flavour. Cultivated Asparagus is almost entirely unknown. The wild plant is found in the neighbourhood of the city, and is gathered and sold in the streets, as Groundsel and Chickweed are in London. It makes an excellent foundation for vegetable soup. The Chick-pea is also largely eaten by the lower classes, both boiled and parched. When gathered young and boiled, it closely resembles our Marrowfat, and is much superior to the ordinary Pea as grown by the Constantinople market-gardeners; but as only one or two Peas are contained in a pod, it is troublesome to shell.

Of fruits, the chief is undoubtedly the Châoush Grape, of whose excellence every traveller has spoken in terms of well-merited praise. The Châoush or Sergeant Grape is grown along the shores of the Gulf of Nicomedia, and from the beginning of September to January and February is eaten in enormous quantities by both gentle and simple. It is a white Muscat oval Grape, and, when in perfection, is universally allowed to be unsurpassed by the Grapes of any other country in Europe. The Sultanieh or Sultan's Grape, which, when dried, forms what we miscall Sultana Raisins, is brought in large quantities from Smyrna. It is a most delicious little Grape, and, from the thinness of its skin and the absence of stones, is more easily eaten by those who have not acquired the Turkish habit of swallowing skin, stones, and all. Figs, of which there are several varieties, Quinces, which are much used in cookery, Oranges, Lemons, and Pomegranates are all good and cheap, but our usual western fruits, such as Pears, Apples, Peaches, Plums, Apricots, Currants, Gooseberries, Cherries, Raspberries, Strawberries, Walnuts, Filberts, &c., are all far below mediocrity. The black Mulberry is good and abundant, but the white species, which the natives seem to prefer to the black, approaches in flavour to a lump of sweetened blotting-paper. A kind of Morello Cherry, called by the natives "vishnah," although unfit for eating, is largely used for making a preserve, which, dissolved in water, forms ordinary sherbet, the common drink of the sober Mussulman lower orders at all seasons of the year. C. W. Quin.

FRŒBEL'S BEGONIA OCTOPETALA.

The extremely unfavourable impression which this plant made not only on myself, but also on everyone whom I have heard mention or allude to it since it was re-introduced in 1873, and the great apparent inferiority of the reality to the beautifully-coloured plate issued by the Zurich firm (which undoubtedly promoted the sale of the plant), and which was said to be an exact and faithful reproduction of the description of the flowers sent home with the tubers by M. Roezl, but which our experience hitherto seems to prove greatly flatters them by giving a deep crimson under petal, when the reality is a dingy greenish tint; the individual blooms, appear also much larger and of a purer white than they really are, resembling, as they do, only an inferior form of Anemone japonica Honorine Jobert—all these facts make me think that a large number of your readers who take an interest in these plants may like to hear what M. Frœbel says concerning this at present unappreciated novelty, which apparently has not yet been seen at anything like its best by British cultivators. In the first place, he asserts that this variety is naturally very late in starting into growth, usually showing no signs of commencing to grow till the end of June or beginning of July, and that it is most injurious to the tubers to attempt in any way to force them into premature growth by any form of artificial heat. That the flowers do not appear till the month of October, and that they are rarely fully developed before November, a season when nearly all other varieties of tuberous Begonias have finished their five months' season of bloom and are going to rest again for the winter. All blooms of Begonia octopetala produced before the end of October or beginning of November are, according to M. Frœbel, poor and inferior in quality and substance. He concludes by stating that it is his firm conviction that the horticultural public will be delighted with Begonia octopetala when they understand that it is practically a winter-blooming species, its proper and natural period of growth being between the months of July and January, and that during the remaining months of the year it is absolutely necessary to allow the tubers to remain in complete repose. He also says that when put into the open air it dislikes the full glare of the sun, and should be so placed that only the morning sun shall shine upon it. M. Frœbel also now sends me another variety, which I had not hitherto heard of, under the name of B. octopetala rosea; it may turn out that this is the variety from the description of which the plate published with B. octopetala was prepared, and that, through some misconception or mistake the tubers of the wholly white variety were distributed instead of those of which the plate was a representation. When both the varieties flower I shall be able to let your readers know whether this supposition proves correct or not. M. Frœbel also informs me that he has already obtained some most interesting and curious hybrids between B. octopetala and the fine glaucous hairy-foliaged B. Frœbeli, of which he invites inspection from any lover of flowers visiting Zurich in the course of August or September next. W. E. G.

Honeysuckles in the Dwelling-house.—Some years ago, as I was passing through a room only used occasionally, I perceived an odour of fresh flowers that surprised me, as none were ever kept there; but, being in haste, it soon passed from my mind. Not long after, being in the room, I noticed the same perfume again, and this time I proceeded to investigate the matter. On raising the curtain of the east window, I found that a branch of Honeysuckle had found its way between the two sashes at one corner while growing in the summer, and had extended itself quite across the window; and on the branch inside there were three or four clusters of well-developed flowers, with the usual accompaniment of leaves, while on the main bush, outside, there was not as yet a leaf to be seen. The flowers inside were just as beautiful and fragrant as if they had waited until their natural time of blooming. Since then I have tried the experiment purposely, and always with the same result.—M. A.

Davallia Moorei for Rooms.—Mr. Herbst informs us that Davallia Moorei is one of the very best plants he has met with for thriving in rooms. He also praises the common Osmunda for house culture. It is probable there are a great number of Ferns that would thrive in rooms. We do not mean in Wardian or other cases of that kind, but exposed to the dry air of a living room; gas and violent draughts of cold are, however, destructive to these and all other plants in dwelling houses.

NOTES OF THE WEEK.

—— The new Victoria Mignonette is now grown in pots for the London market by Mr. Herbst, of Richmond. It is remarkable for its rigid erect habit and flowers, large and even showy compared with the elder form.

—— Wadson's White is the name of a Pink of singularly white and beautiful character which is now sent to Covent Garden in small quantities by Mr. Lee, of Arundel.

—— The rich effect afforded by bunches of Violets, plunged in masses of double or single Daffodils, that one may occasionally see in the barrows early in the morning at this season in Covent Garden is very striking. It is suggestive, also, of the effects that might be obtained by design while dealing with like materials either in a cut or growing state.

—— Mr. Robson, of Linton Park, considers that the presence of certain plants indicates a soil suited for the Rhododendron, and he mentions that the Foxglove, Heath, Brake, Gorse, Broom, and Scotch Fir grow naturally on soil suited for that shrub. Mr. Robson's opinions are worthy of great respect in such matters, but we think this test will not in all cases hold good. We have seen Rhododendrons perish miserably in soils on which several of the above subjects grew wild in abundance.

—— The sprouts from various races of the Cabbage tribe in cultivation seem now to be of even greater value than the heads. What with Broccoli Sprouts, and sprouts and tops of various kinds, the London market is now never without abundance of a variety of the most delicate greens in winter and spring. No plant has done more to improve the food supply of the world than the cliff-dwelling Brassica oleracea.

—— That there is hardly any limit to the modification and improvement that may be effected in flowers, would seem to be proved by some strains of the Cineraria now in flower round London. Their richness and purity of colour are astonishing, even when seen side by side with the showiest blossoms we possess. Many of their flowers look as attractive by artificial light as in the daytime. A very fine and varied strain is now in flower at Messrs. F. & A. Smith's Nurseries at Dulwich.

—— The many choice and very expensive evergreen plants in Leicester Square now look as if they had been caught in a prairie fire, which had been swiftly extinguished by a water-spout. No neglected deciduous trees seem half so miserable. It is sad to observe the way in which myriads of evergreens are yearly planted in London by men who must know that it is worse than useless to plant them. There is, after all, some work to be done in the horticultural tree by the knife of the "Saturday Reviewer," if he only knew the worthless and cankered branches.

—— Whatever may be the virtue of the Cocoa-leaf in S. America to increase the powers of endurance in prolonged muscular exertion, it seems, according to the "Lancet," to have lost much of its marvellous virtue when used in this country. A popular rumour attributed Weston's success in walking to its effect; but it appears that he not only owes none of his power to its influence, but found that, on the whole, it rather lessened than increased his strength. It acted as an opiate, and forced him to sleep. A previous trial in America had the same result. The Cocoa-leaf was tried extensively some years ago by Dr. Buzzard in epilepsy and other forms of nervous disease, but with no striking results. Some patients while taking it described its effect as resembling that produced by wine or spirit; but there was no objective result to encourage its continued administration.

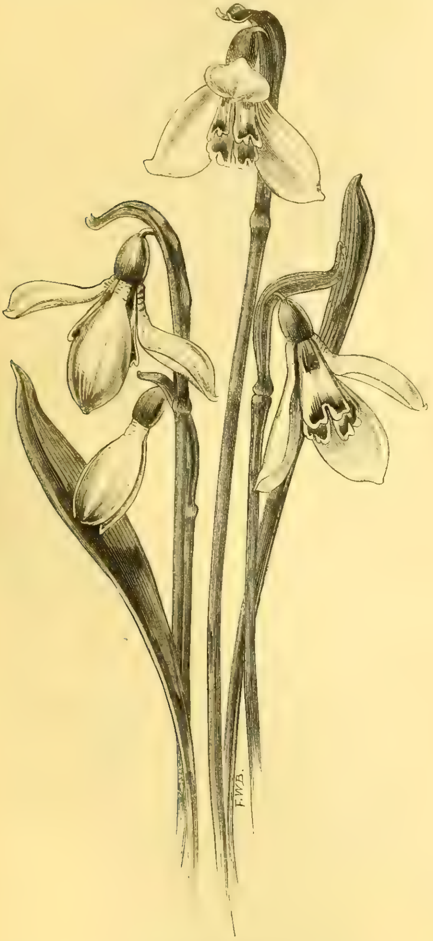
—— Crocus etruscus (Parlatore), which has only hitherto been known to science by Professor Parlatore's description in "Flora Italiana," vol. iii., p. 228, and three or four specimens in the Florence herbarium, gathered by Professor Parlatore in the spring of 1858, was re-discovered by Mr. George Maw, of Benthall, and Mr. S. Sommier, of Florence, early in the present month. It grows in tolerable abundance in Oak woods, at the Salita del Filetto, near the road, about 7 miles from Massa Marittima, on the road to Pomarancie, in the Tuscan Maremma, and not as indicated by Professor Parlatore between Follonica and Massa. There appears also some error in Professor Parlatore's record of the date (April 9), 1858, as in the second week of March, when gathered by Messrs. Maw and Sommier, the plant was nearly out of flower, and most of the specimens had well-matured seed. It was also observed in a field near a little farm-house, known as Poggio di Venti, between Massa and the original station, and was said by the country people to be not unfrequent in the Tuscan Maremma. The flower closely resembles that of Crocus suaveolens, but the tunics of the corm are strongly reticulated, though not quite so coarse in the fibre as the tunics of C. reticulatus.

THE FLOWER GARDEN.

A NEW SNOWDROP.

(GALANTHUS ELWESII.)

We recently saw this fine form of Snowdrop in flower in Mr. Barr's bulb grounds at Tooting, from whence flowers were obtained from which our engraving was prepared. It is, perhaps, the finest of all our Snowdrops, its nearest ally undoubtedly being G. Imperator, but in that variety the green blotches at the bases of the three inner segments of the perianth are wanting. It may be at once distinguished from the common Snowdrop by its larger size, and from G. plicatus by its more glaucous unplaited leaves, but it seems very questionable to us whether all the Snowdrops are not forms of the same species, seeing that there is but little structural difference among them, the main points of distinction being size of flower, and a slight difference in the depth or arrangement of the green blotches of the inner segments. As a garden plant this Snowdrop will be most welcome when more plentiful, not only for planting in patches among the herbage, on outlying portions of the lawn, or wherever the less conspicuous common form is usually to be found, but also for use in bouquets and for decoration. The bold and finely-moulded outer segments are of crystalline whiteness, and the flowers of it which we obtained for sketching kept perfectly fresh for more than a week in a glass of water. Nothing could look prettier than they did, their snowy segments contrasted with Violets and a few sprays of Maidenhair Fern. B.



Galanthus Elwesii.

SCILLAS IN THE WILD GARDEN AND IN BORDERS.

Amongst early flowering bulbs there are few more cheerful or useful than the different species and varieties of the Scillas; and they may be grown as well or better amongst short herbage as in the flower garden proper. There appears to be some confusion in the nomenclature of these bulbs, and probably the same species often go under more names than one; but many of the varieties are so alike, if not allied, that until the genus is taken in hand by some competent authority, this is probably unavoidable. We will begin with Scilla amœna; it is scarcely so hardy as some of the others, at all events, in heavy soil; its flowers, which appear about the end of April, are of a dull blue, with a darker line of the same colour running through the middle of each petal, growing in spikes to the height of 9 in. or so; it requires a light well-drained soil, and a position somewhat sheltered. Next comes S. bifolia, flowering in March with spikes of a fine blue; it has been found growing apparently wild in this country, but is probably not a true native, having escaped from cultivation; the leaves are, as a rule, two in number, of a pale green. There is a white variety equally good, and the two colours should be mixed together in planting; also a rose-coloured one (S. bifolia rubra), but the last I have found difficult to obtain, the rose colour often turning out to be blue or white. This species is useful for forcing. S. campanulata is a strong-growing and handsome kind, and very valuable for planting in shrubbery borders or wild gardens, where it will not fail to bloom plentifully and constantly every year about May; the flowers are bell-shaped and pendent, arranged in pyramidal clusters. There are several varieties, blue, white, and rose-coloured, and all are equally free in growth and desirable. S. campanulata major is larger and finer than the type, but is otherwise identical. S. amethystina is more usually known as Hyacinthus amethystinus, and is a very pretty bulb for the mixed border; the flowers are pendent, in loose clusters, of a beautiful blue; the leaves (which are longer than the flower-stem) are very narrow, and the plant is about 9 in. in height. S. nutans is the common Bluebell, which should be abundantly naturalised wherever it does not occur wild. Many persons, probably, are not aware that there is both a white and also a pink form, which should always be associated with the old kind. Of quite a different appearance is S. peruviana, with its large head of glistening blue flowers, in a perfectly regular, closely packed pyramidal cluster. Each flower is immensely set off by white stamens, making a most pleasing contrast; the leaves are of a shining green, broad, and longer than the flower-stem, and the bulb is larger and pear-shaped. Whatever other species may be omitted from a collection, this should never be absent. It comes from the south of Europe, but is perfectly hardy in this country, and increases rapidly. There is also a white variety, which, though inferior, may be grown in a large collection. Last, but not least, is that most charming little spring bulb, S. sibirica, from the Caucasus, Asia Minor, and adjoining countries; its flowers, which appear before the leaves, are pendent in a loose cluster, and are of the most intense and brilliant porcelain blue. It is a most valuable plant for edgings to beds of spring flowers, or for planting in tufts in the borders, and may also be introduced where the turf is dwarf without misgivings as to its success; and, as it blooms in the bleak month of March, it is doubly valuable. It is better to separate the bulbs every third year, as they increase rather freely if in a good sandy loam. Scilla præcox I take to be identical with S. sibirica, or at most a trifling variety of it. While on the subject of Scillas, I will mention a plant of the same family (the Asphodel); namely, Puschkinia

Scilloides, which may be associated with them. It is a pretty bulbous spring-flowering subject, about 4 in. high. The flowers are cup-shaped and whitish, with a blue stripe, and shaded with the same colour in each petal, arranged in a terminal corymb of about six blooms. The stamens are curiously united together. Plant it in the choicest border, in sandy loam, until the supply is plentiful, and increase by separating the bulbs every third year. Oxon.

LAUREL BANKS IN PLEASURE GROUNDS.

Few shrubs are more effective than the common Laurel, its bright green foliage rendering it attractive at all seasons, and the facility with which it may be trained into any required form, more especially into dense evergreen banks, has caused it to be planted abundantly in pleasure grounds, sometimes even to the exclusion of equally effective subjects. In speaking of Laurel banks I refer to such as are planted on level ground and trained in a flat fashion, a form which has, however, some disadvantages, inasmuch as it is not only badly adapted for showing off the individual beauty of the plants, but the erect-growing branches deprive those at the base of their proper amount of sap. A Laurel bank, as usually seen, consists of one or more rows of plants trained so as to form a flat face or surface, more or less upright, and generally from 4 ft. to 7 ft. in height; the more erect the form of training the sooner the bottom branches begin to decay, and gaps more or less extensive to occur, thus disarranging the whole effect, as upon the perfectly furnished character of such banks from base to summit rests their beauty, and it is no easy matter to fill up gaps effectively under such circumstances. No shrub or tree is more benefited by judicious pruning than the Laurel, for if kept thinned out so that the young growths at the base of the plants get the benefit of light and air, there is scarcely any limit to its longevity. But when trained to a flat face, all the growth is made at the extremity of the branches, which forms so dense a shade that the lateral growths necessary for filling up vacancies perish from want of air and ventilation; consequently there is no reserve or undergrowth to fall back upon when gaps occur, and the only remedy consists in cutting the whole down to the ground and starting afresh. This is one only of the many instances that might be cited of the folly of introducing what are termed permanent features, or rather those intended as such, into gardens and pleasure grounds, that may suddenly fail or become an eyesore. Alterations in such cases mean a serious blemish for years which might be avoided if a more unfettered system of planting were adopted. The Laurel, as I have stated, is of so tractable a nature as regards cutting that it may be kept for an indefinite period pruned to within a foot of the ground, and on undulating surfaces it forms one of the most pleasing of evergreens for ground work. My impression is that shrubberies might be greatly enhanced as regards effect by the employment of leaves and flowers as varied as possible in character, and by a somewhat more liberal use of flowering deciduous shrubs than we now employ. To indicate their individual beauty effectively, neither rows nor patches are needed, but a judicious blending, so that there may be individual effects and yet a harmonious whole. In order to form such a combination, a thorough knowledge of each particular shrub used is necessary, and also the space which they are likely ultimately to occupy. The Laburnum, Guelder Rose, Lilac, and Syringa are all improved when associated with the bright and cheerful shining foliage of the Laurel, and in no shape more than in that of a spreading bank. Isolation is not nearly so good as combination; in short, variety is always pleasing, and in garden scenery should be specially studied. J. Groom.

Henham.

Pelargonium Happy Thought.—A short time ago reference was made to the origin of this Pelargonium. From what I can learn it was raised in this neighbourhood by a Mr. Lynes, The Hamlet, Leek Wootton, Warwick, who is a jobbing gardener and an expert budder and grafter. It was not a seedling, but a sport from the old Pelargonium magenta. It was circulated about, though never sent out by any particular firm as a plant of any merit, though it well deserved to be. It is quite distinct from other Pelargoniums in cultivation. It is an excellent bedder, and no doubt we shall hear more about it when it is better known.—R. Greenfield, *Warwick*.

ROSES FROM CUTTINGS.

Mr. W. Taylor makes a good defence of these in the "Journal of Horticulture." Roses, he says, are grown for other purposes besides exhibiting, and for all such other purposes I have no hesitation in saying that where there is a good natural Rose soil, *i.e.*, a clayey loam such as the hedgerow Briar delights in, that Roses on their own roots are decidedly the best. They do not produce a large flower or two and then bid us good-bye, but go on increasing in size and beauty year after year, and produce blooms by the hundred, filling the air with their fragrance. Last November I planted 250 plants which had been put in as cuttings exactly two years before. They are planted 3 ft. apart every way on a border of very stiff soil, and I expect them nearly to cover the ground this coming summer, and that without any tying or pegging. These were selected from some 400 or more struck at the same time. I have older plants in great numbers which made growths last summer from 6 to 8 ft. in length, and although the season was a cold one the wood is tolerably ripe; and what is a special advantage this year, there are dormant buds to prune to, which on standards are rather too scarce. My pot Roses for forcing are mostly on their own roots, and those which are not so are decidedly inferior to the others. I cannot have the newer kinds this way, but for my purpose old varieties, if they be good, will do just as well. During the London season I have to supply abundance of flowers for the dinner-table. A table for twenty or more people twice a-week has to be covered, excepting a few inches at the edge, with flowers of one, or at most two colours, and Roses, of course, are preferable to anything else. On one occasion last year I sent 900 blooms of Gloire de Dijon; on another as much Stephanotis as would fill two bushel baskets, and sufficient pink Roses to make an outside line; at another time it would be crimson Roses, and so on. I say nothing about the taste of such arrangements, I have simply to obey orders. Now it is plain that such a demand could not be satisfied with a few hundred standards. No; the point to aim at is to have Rose bushes as big as our Rhododendrons, which, I am happy to say, I am in a fair way of doing. Why not use more Roses in shrubberies and by woodland walks? Have them on their own roots, and do not prune too much. Nearly all the Perpetuals are as hardy as the common Briar if they are not coddled up. They would not, perhaps, be prettier than the single Briar in like positions, but their flowering season is longer, and they are mostly sweeter. Rose cuttings of the Perpetual class should not be put in under glass, but more in the way of Gooseberry cuttings in November, and the wood must be ripe. Teas strike best from half-ripe wood in July and August under hand-lights against a north wall.

Gladioli in Trenches.—I prepare these as follows:—I commence by opening trenches, the same as for Celery, about 15 in. deep, 12 in. wide, and 2 ft. apart. I then put 5 or 6 in. of well-rotted manure from an old hot-bed in the bottom of the trenches; with 2 in. of earth, and 2 in. of sea-sand. I then place the bulbs about 15 in. apart on the sand, and cover them with 2 in. more of the same material, filling up with the earth taken out of the trenches. Formerly, the bulbs used to be destroyed by a kind of maggot, and many were badly diseased; but since I have used plenty of fresh sea-sand, I have not seen a diseased bulb or a maggot amongst them. In autumn, when the stalks have turned yellow, I choose a dry day to take them up, and lay them out thinly on the floor of a loft over the potting-shed, where they remain until planting-time comes round again. I have just finished planting nearly 300 bulbs in this manner.—John Clarke, *Cork*.

SWEET IS THE ROSE.

Sweet is the Rose, but grows upon a brere;
Sweet is the Juniper, but sharp his bough;
Sweet is the Eglantine, but pricketh near;
Sweet is the Firbloom, but his branches rough;
Sweet is the Cyprus, but his rind is tough;
Sweet is the Nut, but bitter is his pill;
Sweet is the Broom flower, but yet sour enough;
And sweet is Moly, but his root is ill;
So every sweet, with sour is tempered still,
That maketh it be coveted the more:
For easy things that may be got at will,
Most sorts of men do set but little store.
Why then should I account of little pain,
That endless pleasure shall unto me gain?

Edmund Spenser.

THE KITCHEN GARDEN.

CROPPING THE KITCHEN GARDEN.

In the kitchen garden March begins the gardener's year, for upon the work, well or ill executed in this month, depends much of the success, or even the actual forthcoming, of many crops throughout the coming season. As the questions of arrangement of space for the various crops and the general first sowing of seeds will be now forcing themselves upon the mind of every gardener, a few remarks relating thereto may not be inopportune. First, then, we may consider the succession of crops, which should always be the key to a general systematic plan for the year, and then recapitulate what seeds may now be sown, and in what manner, at the same time premising that these remarks will only apply to private gardens. In proposing rules for crops in succession the nature of the soil must be taken into consideration; light friable soils, which are amenable to the spade at any season, are altogether more manageable than chalky soils or heavy clays; in the latter case general digging in spring or summer is a positive evil. Take, for instance, some ground which has been under Strawberries for three years; if the land be of a friable texture, there will be time for the general crop of Celery being planted in it; if the soil be a heavy clay Celery would not succeed in it, but a late crop of Broccoli might be planted in it after clearing the surface and without any digging, with every prospect of a good crop, preparing it afterwards for Celery in spring. Celery is a most useful crop to start with, because the land must necessarily be well stirred and manured; the Onion crop may follow the Celery, distributing the remains of the decayed manure from the trenches on the surface; when the Onions are removed in early autumn spring Cabbages may be planted out; ground that has been occupied by Carrots, Parsnips, or Beet, after manuring, will be in condition to receive Brussels Sprouts, which should always be planted early, and about 3 ft. apart each way; this land, if heavy, after having been well-manured in autumn and ridged for the winter, would by this time have become mellow and suitable for Peas. Peas may also succeed Celery, to be again followed by Broccoli, Winter Turnips, or Spinach. On clayey soils Turnips may follow Strawberries by simply clearing them off and spreading some leaf-mould on the hard surface, drawing lines and sowing the seeds: Turnips do well in the autumn if sown on a hard surface with the requisite moisture; ground from which Asparagus or Seakale has been removed for forcing, is in good condition for early Cauliflowers, the annual top-dressing given to the land for the former being highly beneficial to their growth; Strawberries will thrive well in such soil with little preparation except trenching. After early Potatoes have been dug, plant late Broccoli, Savoys, Turnips, and Winter Spinach, the latter requiring a dry open situation. Carrots, Parsnips, Salsafy, and more especially Beet, should always have the ground prepared for them by trenching without adding any fresh manure. Parsnips grow large and succulent when the soil is moist and cool underneath, and will succeed well in ground that has been well manured for Broccoli or Cabbages. Shallots, Garlic, underground Onions, pickling Onions, and Tripolis may succeed Lettuce, Endive, or Turnips on borders; Winter Lettuce, Endive, and Parsley, after early Potatoes, Cauliflower, and Shallots. French Beans, as a rule, require the ground to be specially prepared and reserved for them on a warm, sheltered aspect. Runner Beans should be sown in single rows, as divisional or boundary lines, to give them room and plenty of air. The tops of Celery ridges suit Lettuces exceedingly well, as they thrive better on a dry position, if the soil be deep, than most vegetables; indeed, the finest Cos varieties require considerable warmth to bring them to perfection. We may mention that, taken altogether, Brown Cos is the best and hardiest for our climate, and the Paris Green Cos is the variety in the greatest perfection at midsummer.

With regard to the time and the mode of sowing, there are various sorts of main crop seeds which cannot be sown too early; among these are Brussels Sprouts, of which a sufficient quantity should be raised at once, sowing in a frame if possible, if not, in some warm sheltered situation, and transplant as soon as three good leaves appear. We have sown in autumn, in order to have strong plants early in the north, also sowing a pinch of seed at each place intended for transplantation, afterwards thinning to one, for the stronger the plants become, the more abundant will the crop be in winter. Onions should also be sown directly the soil is in condition; though the Onion crop requires all the summer-heat of our climate to mature, yet the seed germinates and grows under a very low temperature. Sow in lines 1 ft. apart; if the soil be light, it should be well trodden, and dry manure from a pigeon or poultry-house forms a most excellent dressing. Parsley should also be sown early, as the seeds take a comparatively long period to germinate, and does best while the soil is cool; one small bed will supply a large quantity of plants for transplanting into lines. Early Mazagan Broad Beans sown in January are now 6 in. high; Broad Beans should have abundance of room, for without a free circulation of air and plenty of light, many of the blossoms will be abortive. Early Cauliflowers should be sown at once to succeed the spring planting in boxes, and placed in a little heat near the glass; put a little seed under hand-lights in the open ground, also a bed in the open border. A sowing of early white Stone Turnip should be made in very rich friable soil; although a large proportion of them may run to seed (this being their natural seeding season), an effort should be made to have them as early as possible. Early Horn Carrots should be sown on a little heat in a frame, and a few beds in the open air of the same variety; the main sowing should be deferred until the second week in April, or even later, in rows 15 in. apart. On heavy soils the seed should be covered with sifted wood, ashes, and fine soil. Commence to sow Beet about the third week in April. Up to the present date, early and second early Peas will only have been sown, but from the middle of March onwards the more desirable Marrow sorts should only be sown—no variety we have yet seen equals Veitch's Perfection and Ne Plus Ultra; these should be sown 6 ft. apart between the rows in thoroughly mellow and rich soil, well mulching and watering afterwards. The above are a few of the useful kitchen garden seeds, which require immediate attention; later crops will be discussed at a future time. W. D. C.

House Sewage in the Garden.—"E. A. H." presents his compliments to the Editor of The Garden, and would be much obliged to any reader who would favour him with information respecting the application of house sewage to garden purposes. Is it suitable for Strawberries, Currants, Gooseberries, and standard fruit-trees, as well as vegetables? In the former case, should it be applied after the fruit has set or at any other special period? And in treating vegetables, should the soil be saturated prior to sowing or after the plant has become established? Will it promote rapidity and luxuriance of growth in the case of evergreens and other garden shrubs?

Celery and Celery Trenches.—I observe that Mr. Thomson (p. 255) asks for any information on this subject, and perhaps the following lesson I learnt from experience may be of some service:—One year I had a lot of fresh and rank manure, and, by way of experiment, put it 1 ft. deep under some Ringleader Peas, which had been sown on a very poor, dry, sandy soil; as soon as the Peas were off, I dug the rows up, and planted them with Cole's Defiance Red Celery, which produced some of the best flavoured Celery I ever tasted, far superior to that grown in the usual manner, besides which the plants did not give the least indication of running. Of course, water was supplied liberally. I do not mean to say that such treatment would be suitable in all soils, but it is simply my experience in the instance mentioned above. I have tried the plan on heavy soil, but with varying results. For light soils I have found Sandringham and Leicester Red very useful, as they are not too tall, and, as a rule, Celeries of a dwarf kind are the best.—W. J. May.

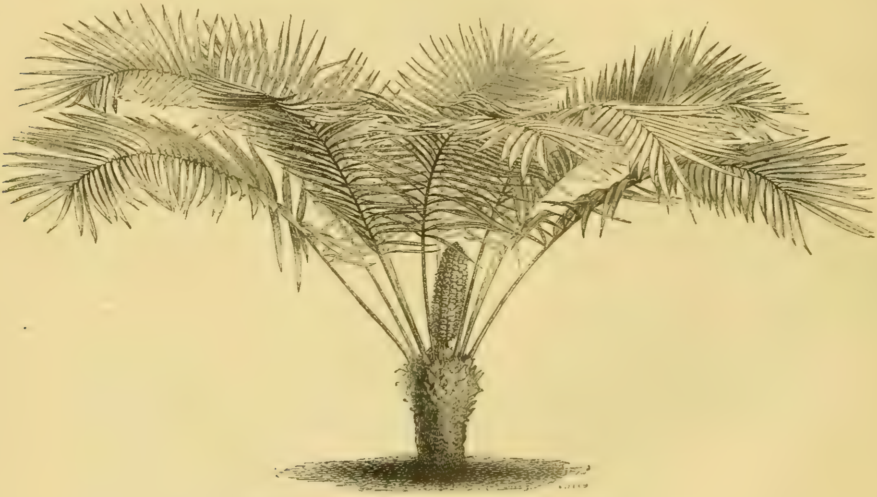
Different Kinds of Asparagus.—Evidence in favour of the distinctness of certain kinds of Asparagus seems to be accumulating. There is, I believe, no reason to suppose the plant to be less liable to variation than many others. Will any of the readers of The Garden kindly state their experience of Connover's Colossal?—W. T.

How to Have Globe Artichokes in Succession.—This is a good time to divide and transplant portions of these, as when left undisturbed there is sure to be an over-abundant supply during the middle of summer and a corresponding scarcity later in the season; but by transplanting a portion each year, not only will the plants so treated be greatly invigorated, but the supply of heads will be materially prolonged, as the transplanted ones will come into bearing after the established roots have ceased, and will prolong the supply to a late date.—J. Groom, *Henham*.

THE INDOOR GARDEN.

CERATOZAMIAS.

Cycads present one of the types of vegetation essentially characteristic of some warm or hot and dry regions, but they may be said to represent now more the remains of a prominent feature of a former flora than as belonging to the present epoch. From the occurrence of abundant petrified trunks and leaves, we know that at some very remote period they formed no inconsiderable proportion of the vegetation of this country; now they are associated with fleshy Cacti in Mexico, with Mesembryanthemums, Stapelias, and other succulent plants in South Africa, and with rigid-leaved Proteaceæ, Leguminosæ, and Myrtaceæ in Australia; and outliers of this singular family of plants are found in the mixed vegetation of Japan, India, and some parts of tropical America. The genus Ceratozamia is, so far as at present known, peculiar to Mexico, and, like nearly all the members of its family, the species have thick, leathery, and almost woody pinnate leaves. But the horned scales of both the male and female cones furnish the most striking distinctive character of the genus. The first species, and the one upon which the genus was founded by Brongniart ("Annales des Sciences Naturelles," troisième série, vol. v., t. 1) was introduced by Ghiesbreght into continental Europe previous to 1846, but the exact date of its appearance in British gardens is unknown to me. Indeed, although C. mexicana and C. Küsteriana annually produce their cones in this country, none of the species have, I believe, been figured in any of our magazines. Besides the two species named, Miguel, who has devoted much time to the elucidation of the family, has described four or five others, simply from the leaves alone, and therefore some doubts exist as to their belonging to the genus. It is unnecessary to say anything further here respecting the botanical character of the genus beyond the facts that the male and female cones are produced on separate plants, and the seeds are borne two together on the underside of each scale of the female cone, much in the same way as in many of the Conifers. To ensure the fertilisation of the ovules or young seeds, the pollen should be conveyed to the female cones; but the pollen is produced in such superabundance that if male and female plants are flowering at the same time in the same house, and the climatal conditions are favourable, it is almost certain that some of it will reach the ovules unaided. Ceratozamias, and, indeed, most Cycads, will flourish in a warm greenhouse where the atmosphere is not overcharged with moisture; but they nearly all succeed better in a tropical house, and the higher the temperature the greater the degree of humidity they will bear without injury. A constant dripping of water on the leaves speedily causes decay. The soil usually recommended for this class of plants is a sound loam mixed with a good proportion of sharp sand. They are of very slow growth, and some years must pass before they attain such a trunk as is shown in the accompanying engraving; but they usually stock out at the base, and from their offsets, as well as from seed, they are propagated.



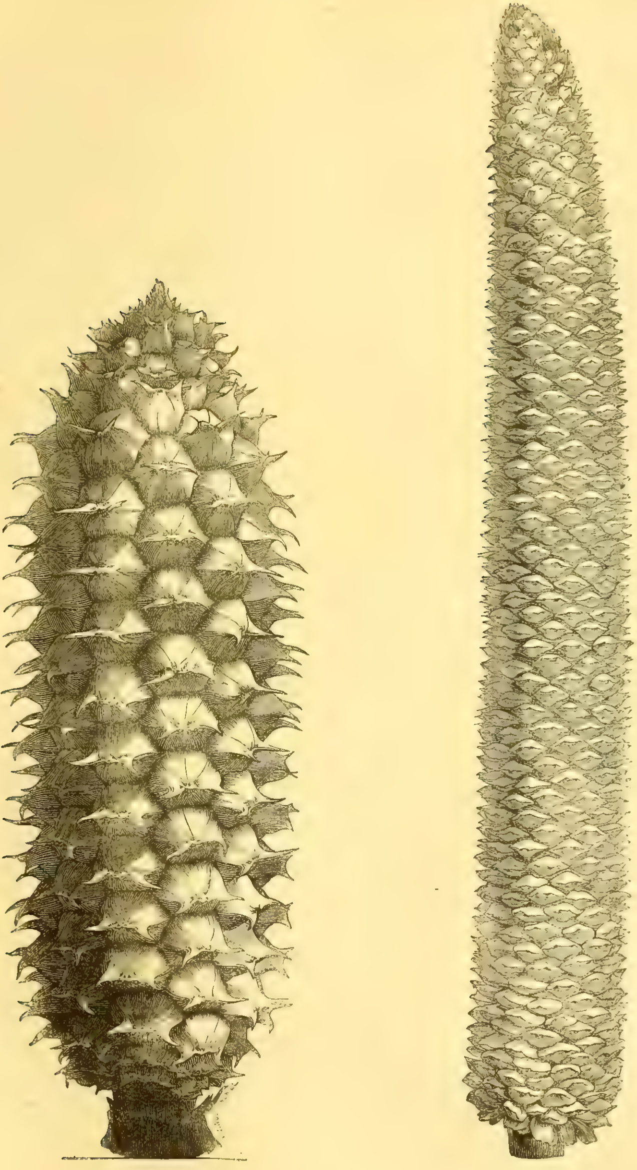
Ceratozamia mexicana (about one-twentieth natural size).

Description of the Species.

C. mexicana ("Annales des Sciences Naturelles," troisième série, vol. 5, t. 1).—Trunk, thick and short, covered with the remains of the petioles of fallen leaves; leaves of a rich dark green, pinnate, borne on long prickly petioles, which are shaggy when young, in vigorous plants often 5 to 6 ft. long; petiole nearly round; leaflets very numerous, 6 in. to more than 1 ft. in length, lanceolate, tapering at the base to about ½ in. in breadth, and upwards into a sharp point, traversed longitudinally by numerous contiguous nearly transparent veins, margins closely recurved. Female cone, 9 in. to 12 in. long, by 4 in. to 6 in. in diameter, the scales very prominently two-horned. Male cone narrower and longer, borne on a hairy stalk, scales furnished with two teeth rather than horns. The accompanying figure of this plant is reduced to about one-twentieth of the natural size, and the cones to about one-half. Mexico, introduced by Ghiesbreght before 1846.

C. Kusteriana ("Gartenflora," 1857, t. 185, fig. 17, and t. 186, fig. 25).—Trunk, short, thick, clothed with the persistent bases of the petioles, glabrous; young growing leaves, hairy, ultimately glabrous; petiole, nearly terete, unarmed, traversed longitudinally, as well as the rachis, on the upper side, by two furrows; mature leaves of luxuriant plants, 4 ft. or more in length, with about forty pairs of leaflets; leaflets, nearly opposite, crowded, 6 to 9 in. long, with a long tapering point; male cones, longer and narrower than in the preceding species, erect, shortly stalked, tapering at both ends; scales, furnished with two divergent horns, the upper ones sterile, the lower fertile. Mexico, introduced by Karwinsky. This species is easily distinguished from the foregoing by its unarmed petioles and its smaller opaque leaflets tapering from just above the base upwards to the point.

C. Migueliana. Leaves, with about five (?) pairs of leaflets, when young, hairy and hoary; petiole, long, nearly cylindrical, very spar-



Female Cone. Male Cone.

Fruit of Ceratozamia mexicana.

ingly beset with prickles near the base; leaflets opposite, or nearly so, wedge-shaped at the base, obliquely obovate, abruptly acuminate, margin thick and revolute, on the lower side towards the tip wavy and often furnished with one large tooth. The dimensions of the leaf are approximately 3½ ft. long, on a petiole of 18 in., and the leaflets are 8 to 9 in. long by 2¾ to 3 in. broad. This description is borrowed from De Candolle's "Prodromus." The five pairs of leaflets should, doubtless, be fifty. This species is said to differ sufficiently from C. latifolia in the length and breadth of its leaflets. Its native country is uncertain, and fruiting specimens alone can determine whether it is correctly referred to this genus. This last remark applies to all the following species:—

C. latifolia.—Petiole, glabrous, cylindrical, more or less prickly; leaflets lanceolate, all except the lowermost nearly equal-sided, 4 to 5 in. long by ¾ to 1⅓ in. broad.

C. longifolia.—Petiole, thickly studded with prickles; leaflets, numerous, narrow, and somewhat obliquely lanceolate; leaves, about 3½ ft. long; leaflets, 15 in. or 16 in. or a little more in length by an inch or more in breadth. C. intermedia is regarded as a small variety of this species.

C. robusta.—Petiole, stout, prickly; leaflets, lanceolate, nearly equal-sided, very falcate before they are fully grown—perhaps merely a variety of C. mexicana, with a more persistent tomentum on the petioles; leaves, 4 to 5 ft. long, stout petiole, and rachis prickly; leaflets in about thirty nearly opposite pairs, 6 in. to 10 in. long by 1 in. or less broad.

A comparison of these descriptions would lead one to suppose that the plants described under the last names barely rank as distinct names, much less as species.

C. brevifrons is the same as C. mexicana, C. boliviana is Zamia boliviana, and C. muricata is Z. muricata. W. B. H.

STOVE PLANTS IN WINTER:

COMMON ERRORS IN THEIR CULTURE.

The temperature that stove plants will bear and require, if they are to be made the most of by giving them as long a season for growth and flowering as is consistent with their health and well-being, is a subject upon which very different views are held. The injunction, a thousand and one times given, not to raise the temperature of the stove until the days get long, and to keep a low night temperature, has been wellnigh repeated until it has become an article of faith in gardening practice, and the individual who suggests anything opposed to this is looked upon as an innovator of unsound practice, that will quickly exhaust the plants. Yet those who hold such views very likely have never given a thought as to the night temperature that many of our stove plants are subject to in their native countries, even during the coolest season, neither considered the short season of rest they there undergo. On this latter point some allowance must be made for the shorter days we have in this part of the world in winter; yet I am convinced by repeated trials over a long period that the reason so many fail, or only partially succeed, with many of the best stove plants, is on account of the much too low temperature they are kept in during the winter, still further aggravated by their being kept dormant for much too long a period. The teaching that stove plants should not be excited into growth until the sun has got much power is so plausible, that many take it for granted and act accordingly, without ever attempting to prove it one way or the other by practice. It must be borne in mind I am not speaking of plants that only require, and which do the best in, an intermediate temperature, but of plants from the hottest parts of the world; and of these I say that by far the greater number are rested too long in winter, and during that time kept in too low a temperature. But when plants are started early, whilst the days are short, they must be grown in thoroughly good light houses, with the larger specimens that occupy the centre of the house elevated so as to all but touch the roof glass. The all-importance of light in the fullest measure we can give it, for flowering plants that are subject to a high temperature, has not yet been fully realised by many growers, possibly through the necessity for shading many of them from the direct rays of the sun when it is powerful. But we must not forget that it is a very different thing to simply shade a plant from the burning influence of the sun, and to place it continuously where it will not receive sufficient light—a condition inseparable from plants when they are plunged in bottom-heat in the centre bed of a stove in houses of the ordinary construction; or when placed, as too often seen during the growing season, in a position where effective arrangement was more considered than their well-being. This is ever the case when placed so as to be below the eye. The same effects are inevitable when roof climbers are grown over the general occupants of the stove. Where the plants are of necessity subject to any of the above adverse conditions as to light, then of course it is better not to excite them too early by subjecting them to a temperature that will force them into rapid growth before the days are long. To the fact of flowering stove plants not being grown to produce fruit, and their existing in some sort of condition when they do not receive the full volume of light they so much need, may be attributed the apparent too general forgetfulness of their wants in this matter. What sort of success might the individual expect who, when starting his Vines in November for an early crop, kept them with their heads 4 ft. or 5 ft. away from the glass, with the evil still further aggravated by some kind of climbing plants grown at intervals above them, in the way common with stove plants? Yet flowering subjects require the greatest possible amount of light we can give them, just as do the Vines under the conditions I have named. When this is fully realised, we shall hear less of the advice to treat stove plants in a way that forces them into an unnaturally protracted rest, extending over four or five months of the year, and from the effects of which it takes them half the growing season to recover. For stove plants 65° in the night and 70° in the day, during the shortest days of winter, is the temperature most suitable to their requirements; and five weeks at the end of the year and five at the commencement—ten in all—is quite as long as it is either necessary or advisable to keep them at rest. As soon as we get fairly into February the heat may be increased two or three degrees, gradually rising it still higher as the days lengthen. During the time of the lowest temperature all deciduous plants, or such as are nearly so, should have the soil kept dry, without being in a condition absolutely devoid of moisture, or such as would cause the bark to shrivel. This completes the ripening process, and induces the cessation from growth also requisite. Plants so managed have their buds plump and round, ready to burst into strong, sturdy growth as soon as water is freely given; whereas those that are forced to rest by being chilled in an unnaturally low temperature are not in a condition to start freely. With many plants that are so rested it turns out to be their last rest, the life being starved out of them. The dry condition of the soil during the dormant season so necessary for deciduous plants, of which the Allamandas and Bougainvilleas are examples, must not be attempted with such as are evergreen, as for instance, the Ixoras and Gardenias. These are very often injured by not receiving enough water at the roots in the winter, as also by keeping the atmosphere much too dry—a condition that is mischievous even to the deciduous plants, and totally unnecessary for them when their roots are kept dry enough.

The conclusions I have arrived at from this subject are based on experience. Numbers of the best and finest stove plants I ever grew were subject for nearly a score of years to a temperature, through the winter, of never less than 65° to 70°, except on the occasion of severe frost, and as near the higher figure as it was possible to keep them. Some plants were never during that time quite at rest, simply alternating betwixt active growth in the summer and slower growth in the winter. Yet the treatment they were thus long subjected to did not produce the slightest symptoms of wearing out; on the contrary, the oldest plants were as strong and vigorous as they were the first season they were grown. Ixora coccinea (the king of stove plants) I have cut freely back the first week in September, and have had the same plant in the middle of May bearing a hundred heads of flower, over a score of which were from 6½ to 7 in. in diameter, measuring a wire passed through the centre of the flowers; many of the shoots were over 5 ft. in length, proportionately strong, with leaves almost as big as a common Laurel. Such growth as this was not produced by starving the plants through the winter in a low temperature, but the opposite; they were never plunged in bottom-heat, but always kept elevated within an inch or two of the glass in a good house, where they got every ray of light possible, lowering them gradually as the shoots extended.

T. Baines.

Imantophyllum miniatum as a House Plant.—The dark green, leathery foliage, and bright orange-coloured flowers of this plant, thrown up in large trusses, render it a very conspicuous and valuable plant for indoor decoration. I lately saw a plant in a 14-in. pot with several immense heads of bloom upon it—one of which was fully 18 in. across, at the least. It had, when I saw it, been for some time in the front hall of the mansion, and was still in perfection, and much admired by visitors. The plant is common now, and the deep orange-coloured variety is the best.—J. S.

New Guinea Plants.—Under the title of "Papuan Plants," Dr. Mueller, of Melbourne, has published a first instalment of notes on New Guinea plants, collected by J. Reedy, who was sent thither by Sir W. Macarthur. Almost nothing new is here recorded, and certainly nothing that might not have been expected to occur; but Dr. Beccari, whose magnificent Bornean collections have enriched so many herbaria, is (according to the "Academy") collecting in New Guinea, and will doubtless add much to our knowledge of the flora of that interesting region.

Creepers for a Conservatory.—I have just erected a conservatory about 40 ft. by 20 ft., and am anxious to plant some creepers in it; they will require to grow some 8 ft. or 9 ft. before they reach the first iron brackets. It is intended to plant under the stages, and good borders are made. It would be desirable to have some evergreens among them; would the following be a wise collection to try: —Abutilon striatum, Bignonia grandiflora, Cobœa scandens variegata, Lapageria rosea, Passiflora (two or three sorts), Tacsonia, Van Volxemi, Plumbago capensis, Cissus discolor, Hoya, Solanum jasminoides, Thunbergia laurifolia, and some varieties of Clematis?—Xon. [We should omit the Abutilon, Cissus, Hoya, and Thunbergia. Clematis indivisa lobata is the loveliest spring flowering greenhouse climber we have ever seen. Fuchsias are very beautiful treated as climbers].

Hardiness of the Camellia.—Like many other Japanese plants, the Camellia withstands our winters in the open, and considerable misconception exists as to its hardiness. We have four large plants of it here growing out-of-doors; one is a fine example of C. variegata, which last year produced 960 blossoms. We commenced cutting flowers from it on the 4th of October, and it continued blooming up to the 5th of May, and now (March 9) there are upwards of 200 blooms on it ready for cutting. The other is the old Double White, also a fine specimen, which produces some magnificent flowers. One planted in a border, exposed to all weathers and never protected, flowers abundantly. These Camellias have been exposed on several occasions to a temperature as low as zero, and yet are uninjured. When Camellias are planted out of doors, it is essentially necessary for them to have thoroughly good drainage.—E. M. Davies.

Agapanthus umbellatus as a Greenhouse and Indoor Plant.—This plant is amongst the most useful and most easily cultivated greenhouse plants we possess. It may be grown as a large or small specimen, and is exceedingly desirable for rooms, and very showy. The Agapanthus (African Lily) is a handsome greenhouse perennial, and a sure bloomer, and throws its large heads of delicate blue lily-like flowers well above the foliage. In the south of England and Ireland it is often grown as a hardy plant, but even where this is the case, well-grown specimens in pots will be found useful. A good plant in a 12-in. pot, with six or eight heads of bloom upon it, is one of the handsomest subjects for a single vase that can be employed, and we always think it looks best in a room. It should be grown in a cool greenhouse, and in a good light. We have recently potted our plants in good strong loam, sand, and leaf-mould, ramming the soil middling firm. They will have room and light and air, and when they come into flower during the summer they should be used exclusively for single vase work in the windows, passages, or front halls; for, being very hardy, the plant stands dry and draughty situations better than many others.—J. S.

Sash-lines for Forcing-houses.—The necessary amount of moisture in the atmosphere of forcing-houses soon rots ordinarily made sash-lines. The best that I have yet met with are those made of White Manilla, which is not only as strong as wire rope but resists the effects of damp better than almost any kind of material used for the purpose.—J. Groom, *Henham.*

LANDSCAPE GARDENING.

Mr. F. L. Olmsted, the well-known designer of the Central Park, New York, has an article on this subject in the new edition of Appleton's "Cyclopædia," from which we give the following extract:—

There are those who will question the propriety of regarding the production of the poetic beauty of natural landscape as the end of landscape gardening, on the ground that the very term "natural beauty" means beauty not of man's design, and that the best result of all man's labour will be but a poor counterfeit, in which it is vain to look for the poetry of Nature. Much has been written to this effect: with what truth to the nature of man it will be well cautiously to consider. It is to be remembered, with reference to landscape effect, that Nature acts both happily and unhappily. A man may take measures to secure the happy action and to guard against the unhappy action in this respect with no more effrontery than with respect to the production of food, or protection from lightning, storm, frost, or malaria. He need not wait for the slow and uncertain process by which, in Nature, a certain position would be adapted for a certain tree. He may make the soil fertile at once. He need not take the chance that a certain thick growth of saplings will be so thinned by the operation of what are called natural causes that a few of them may yet have a chance to become vigorous, long-lived, umbrageous trees, knowing how much more valuable a very few of these will be in the situation, with the adjoining turf holding green under their canopy, than the thousands that for long years may otherwise occupy it, struggling with one another and barring out the light which is the life of all beneath them, he may make sure of what is best with axe and bill-hook. The ultimate result is not less natural or beautiful when he has done so than it would have been if, at the same time, the same trees had been eaten out by worms or taken away, as trees sometimes are, by an epidemic disease. On the other hand, there are several considerations, neglect of which is apt to cause too much to be asked of landscape gardening, and sometimes perhaps too much to be professed and attempted. The common comparison of the work of a landscape gardener with that of a landscape painter, for example, easily becomes a very unjust one. The artist in landscape gardening can never have, like the landscape painter, a clean canvas to work upon. Always there will be conditions of local topography, soil, and climate by which his operations must be limited. He cannot, whenever it suits him, introduce the ocean or a snow-capped mountain into his background. He cannot illuminate his picture with constant sunshine nor soften it by a perpetual Indian summer. Commonly, he is allowed only to modify the elements of scenery, or perhaps to bring about unity and distinctness of expression and suggestion in a locality where elements of beautiful landscape already abound, but are partly obscured or seen in awkward, confusing, and contradicting associations. This is especially likely to be the case in undulating and partially wooded localities, such as are often chosen for rural homes. Again, the artist in landscape gardening cannot determine precisely the form and colour of the details of his work, because each species of plant will grow up with features which cannot be exactly foreknown in its seed or sapling condition. Thus, he can see his designed and imaginary landscape only as one may see an existing and tangible landscape with half-closed eyes, its finer details not being wholly lost, yet nowhere perfectly definable. Still, again, it is to be remembered that works in landscape gardening have, as a general rule, to be seen from many points of view. The trees which form the background, still oftener those which form the middle distance, of one view must be in the foreground of another. Thus, the working out of one motive must be limited by the necessities of the working out of others on the same ground, and to a greater or less degree of the same materials. Finally, the conditions of health and convenience in connection with a dwelling are incompatible with various forms of captivating landscape beauty. A house may be placed in a lovely situation, therefore, and the end of long and costly labours of improvement about it prove comparatively dull, formal, and uninteresting. What is lost is a part of the price of health and convenience of dwelling. The landscape gardener may have made the best of the case under the conditions prescribed to him. It has been said that landscapes of a particular type associate naturally and agreeably with certain events. It is to be added that the merit of landscape gardening consists largely in the degree in which their designer has been inspired by a spirit congenial to elements of locality and occasion, which are not, strictly speaking, gardening elements. The grounds for an ordinary modest hôme, for instance, may desirably be designed to give the house, gardens, and offices an aspect of retirement and seclusion, as if those had nestled cozily down together among the trees in escape from the outside world. The grounds of a great public building—a monument of architecture—will, on the other hand, be desirably as large in scale, as open, simple, and broad in spaces of turf and masses of foliage, as convenience of approach will allow, and every tree arranged in subordination to, and support of, the building. The grounds of a church and of an inn, of a cottage and of an arsenal, of a burying-place and of a place of amusement, will thus differ, in each case correspondingly to their primary purpose. Realising this, it will be recognised that the choice of the site, of the elevation, aspect, entrances, and outlooks of a building for no purpose can be judiciously determined except in connection with a study of the leading features of a plan, of its approaches, and grounds. Also, that in the designing of roads, walks, lakes, and bridges, of the methods of dealing with various natural circumstances, as standing wood, rocks, and water; in a determination of what is possible and desirable in respect to drainage, water supply, distant prospects to be opened or shut out, the avoidance of malaria and other evils—all these and many other duties are necessarily intimately associated with those of gardening (or the cultivation of plants) with a view to landscape effects.

RUSH CARPETS.

Before the era of carpets, it was customary to strew Rushes, bay and leaves, sometimes mingled with sweet smelling Herbs, over the floors of the rooms; which ordinarily were allowed to remain several days or weeks, and become the receptacle of the *débris* of meals, and dust, and dirt, from which arose an unwholesome effluvia. It was thought to be a piece of unnecessary luxury on the part of Wolsey, when he wisely caused the Rushes of Hampton Court to be changed every day. We have frequent allusions to them in the writings of the period. Froissart says, "The Count de St. Foix went to his chamber, which he found ready strewed with Rushes and green leaves and the walls hung with boughs newly cut for perfume." Sir Thomas More (1483) describes Elizabeth, the widowed Queen of Edward IV., when in the sanctuary at Westminster, as "sitting alone amongst the Rushes in her grief and distress." Bradshaw in St. Werburg (1500) writes:—

> "All Herbes and flowres fragrant, fayre and swete
> Were strewed in halls, and layed under theyre fete."

The last monarch whose presence-chamber was so covered was Queen Elizabeth. Shakespeare, in "Romeo and Juliet," act i., scene 4, writes:—

> Let wantons, light of heart,
> Tickle the senseless Rushes with their feet."

And in "Katherine and Petruchio," act iv., scene 1, it is asked—

> "Are the Rushes strewn?

There was a person called a Rush-strewer attached to many houses.

The Formation of Coal.—Mr. E. A. Wunsch, in his annual address to the Geological Society of Glasgow, referring to the evidence showing the immense time required to produce a seam of coal, drew attention strongly to the conditions which he had examined in the Isle of Arran. There he "found numerous cylinders of trees completely flattened of course, lying across each other at various angles, with their bark, compressed into less thickness than common pasteboard, and the carbonaceous matters reduced to graphite, so that from 3 in. to 4 in. in thickness of this impure coal contained probably twenty generations of trees overlying each other. Now if we allow thirty years only for the life of each tree, we have 600 years for the formation of 4 in. of impure coal, or 1800 years for the formation of 1 ft. of coal."

The Cause of Landslips.—The fall of hill masses is a phenomenon not uncommon in Switzerland. The nature of such catastrophes is investigated in a small work recently published by Dr. Britzer. He distinguishes in every such fall three regions—the place of origin, the cause of the rushing mass, and the region of deposition. Most of the phenomena are due to the softening of impermeable marl, clay, or clayey rocks, in whose layers the water stagnates. The mass is gradually loosened and loses its hold. Fissures first arise, as certain pieces of the surface break away before others. When the last attachments are sundered the mass slides down (like a ship from the stocks) on the slippery underlayer, or tumbles over, breaking into pieces. There are frequently, however, falls of greatly inclined masses, without any softened layer being present. The masses have been saturated with water, which has increased their weight, and they glide down over their solid, rocky foundation, simply in consequence of dissolution and increased weight. Further causes are earthquakes and loosening of the rocks through frost. The phenomena still, however, present many problems to the geologist.

Raffia—In many of our seed stores Raffia is introduced in competition with Linden bark for tying plants. It is not quite so low in price, but is sometimes thought to go further. It is, according to the "Gardeners' Monthly," simply the split leaves of a Palm of Madagascar—Sagus Ruffia.

PLATE XIV.

THE BEAKED PHALÆNOPSIS.

(PHALÆNOPSIS LOWII).

By F. W. BURBIDGE.

The different species belonging to this genus have long been considered to be among the most beautiful of all Orchids; and, as no collection of the warmer-growing kinds is complete without them, a few remarks on their culture may prove useful. These beautiful plants, with one or two exceptions, come from the hottest and most humid portions of the earth's surface—viz., Java, Borneo, Sumatra, and other islands of the Malayan Archipelago; while a few are found on the Continent of India itself, their principal habitats being Moulmein, Rangoon, and the Eastern Himalaya; one or two are also natives of the Philippine Isles. In cultivation, they require the warm humid temperature of a plant-stove, or East Indian house; for, of all Orchids, these are the least likely to adapt themselves to what is generally termed "cool treatment." P. Schilleriana, however, perhaps the hardiest of the whole group, grows moderately well in a warm Cattleya-house, or cool plant-stove, where the temperature does not descend below 50° during winter. But it is best to grow all the species together in a warm corner, where the winter temperature is regular, and never below 60°. When well grown, few other Orchids rival these in graceful beauty: they are not only profuse bloomers, but their delicate white or rosy-tinted flowers last in perfection for many successive weeks; indeed, it is nothing uncommon for P. amabilis and P. grandiflora to be in flower for six or eight months out of the twelve, while it is a rarity to find P. rosea except in bloom. Mr. Robert Warner has had over 1000 Phalænopsis flowers fully expanded at the same time in his collection at Chelmsford. Young plants, with only one or two leaves, frequently throw up flower-spikes, and, if allowed to flower, they often seriously injure themselves in so doing. It is best in practice to pinch off all flower-spikes as soon as they appear, until the plant has become thoroughly well established, for nothing tends so much to weaken their constitutional vigour as early flowering. Phalænopsis may be propagated by dividing plants that break from the base, and some plants do so very freely, especially if the leading growth becomes checked or injured in any way, while not unfrequently some of the species produce young plants adventitiously on their old flower-stems. P. amabilis, P. grandiflora, P. Schilleriana, but more especially P. Luddemanniana, frequently throw off young plants in the way just named. When these plants commence to emit roots, they can be fixed on small flat blocks or rafts of Teak or Acacia-wood, and left on the parent plants until established firmly in their new quarters, after which they can be severed from the plant and treated as separate individuals. During the summer months, a little fresh living Sphagnum Moss placed around the fleshy roots of plants on blocks is beneficial, as it preserves them from extremes of moisture and exposure to the sun. Small plants do best on blocks suspended in a close warm corner of the house, and near the light. As they increase in size, they can be partially plunged in well-drained pots, taking care, however, not to hamper the roots with too great a bulk of finely-divided compost, which is apt to settle down among the drainage and become sodden, in which case the roots embedded will speedily rot. In Orchid-houses, which are naturally dry, the roots of nearly all Epiphytal Orchids seem quite willing to enjoy the shade and moisture afforded by rough lumps of fibrous peat and fresh Sphagnum; but only supply them with a genial temperature, saturated pretty regularly with the soft vivifying humidity in which they luxuriate so vigorously in their native habitats, and the roots will soon creep out into the light and air, wrap themselves round pots, blocks, or anything that comes in their way, or even bind themselves together in bundles. If Phalænopsis are grown in pots—and we know that noble specimens are so grown—the compost used should consist of the best fibrous peat obtainable, carefully broken into lumps the size of pigeons' eggs, or larger, and mixed with an equal quantity of crocks and fresh living Sphagnum. The pots themselves should be thoroughly clean, and may be filled four-fifths of their heights with fresh crocks well washed, placing

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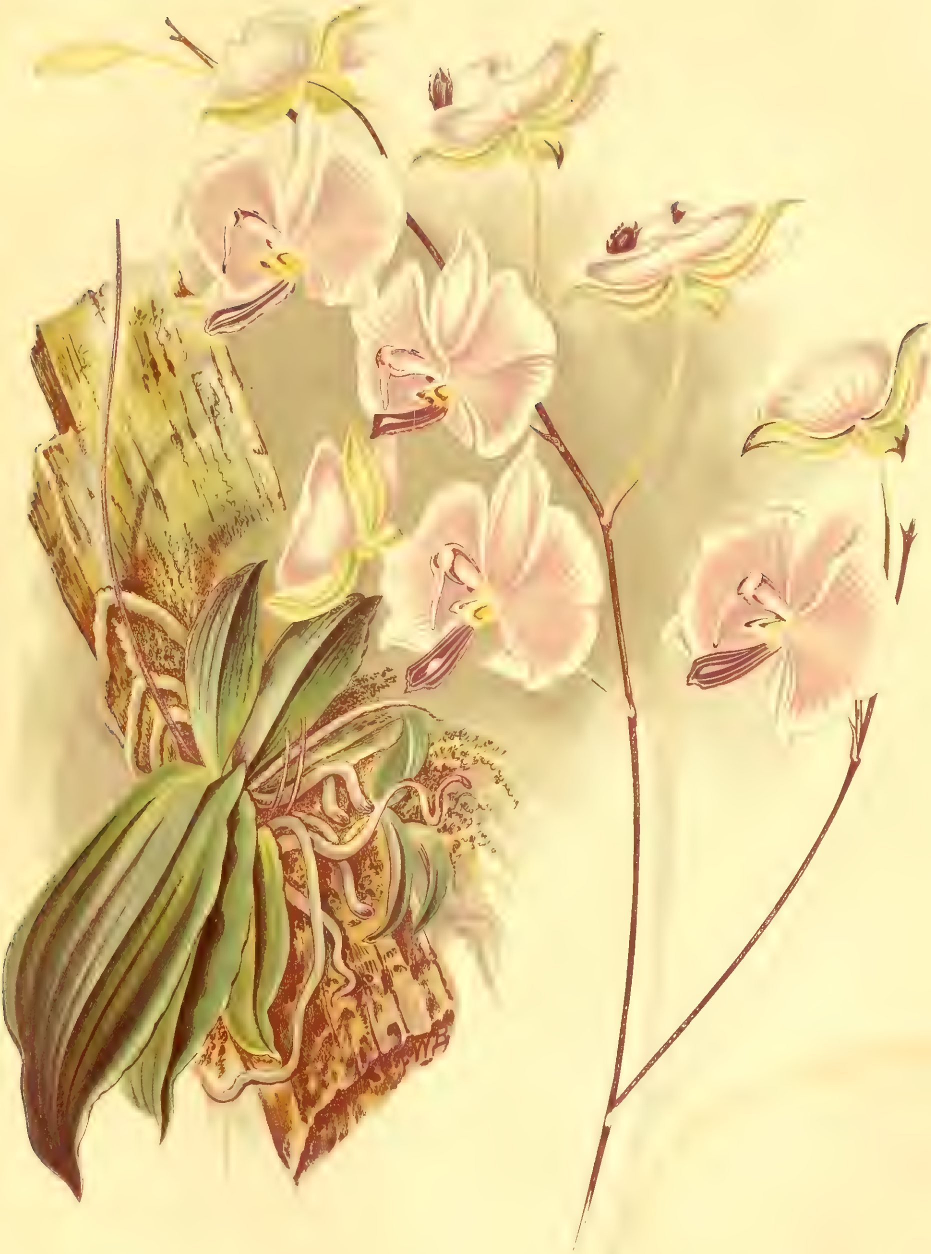
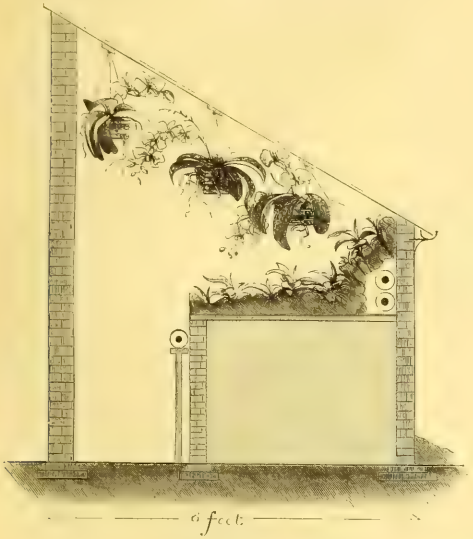


THE [illegible] LEAVED PHALÆNOPSIS. ([illegible])

a layer of small ones on the top, and a layer of good tough Moss above that, to prevent the smaller particles of the compost from washing down and choking the drainage below. Elevate the collar of the plant well above the rim of the pot, and gently embed the lower roots into the above compost, placing a layer of freshly-picked Moss over the whole, so as to form a rounded cone with the plant at its apex. Plants potted in this manner rarely fail to grow well, as the air has free access to the roots; and, unless this is the case, they soon go wrong, while it is almost impossible for them to be injured by any undue excess of water, as there is every facility for any superfluity of moisture to escape. The secret of Orchid-growing is genial humidity in the atmosphere, small pots well drained, fresh living Sphagnum on the surface of the compost, and an abundant supply of tepid water, and a regular temperature when making their growth. One of the best grown private collection of Phalænopsids we have yet seen is that of Mr. Michaels, Cholmeley Park, Highgate, who grows them in a small lean-to house, of which our engraving represents a section. A week or two ago we here saw fifty or more plants of P. amabilis, P. grandiflora, and P. Schilleriana in great beauty, the gorgeous wreaths of broad-petalled flowers hanging gracefully on every side. Mr. F. Newman, who cultivates Mr. Michaels' plants, thus describes his mode of treatment for Phalænopsids:—"In March the house is kept comparatively dry and cool, but I give the plants sufficient moisture at the roots to enable them to sustain their burden of flowers. The average temperature by night is 58°; day temperature, if fine, 65°; if cold and frosty, 62°; but, as the season for growing advances, I increase the heat and moisture, and in the summer months (June, July, and August) the average temperature of the house by day is 85°, sometimes 90°, falling at night to 75°, keeping the plants saturated with an abundance of atmospheric moisture, or feeding by precipitation, never allowing the house to become dry. A little weak manure-water several times during the growing season will be found highly beneficial. When the house is closed for the night I occasionally sprinkle the paths with water impregnated with cow or fowl manure, being very careful not to give an over-dose, and I invariably find such treatment a great preventive in keeping down insects. Most of the plants (nearly 100 in all) are grown in baskets made of Teak-wood, with a few crocks and some good fresh Sphagnum. Last year the glass was painted over with a light green colour, in addition to which I used a thin blind when the sun was bright." Some of the finest specimens of Phalænopsis in this country are grown in pots. A superb example of P. Schilleriana in the collection of Mr. Milne, Yewfield House, Arbroath, is growing in a great tub, and bears nearly 200 flowers on a single spike! Mr. Rawson, of Mill Hill House, Halifax, has some remarkable specimens of P. amabilis and P. grandiflora with ten or twelve fine leaves each, and these are grown in common square wooden baskets, suspended near the roof of an ordinary span-roof plant-stove. On one plant of P. grandiflora I saw eighteen flowers on the tip of a branched spike all open at the same time, and these were nearly 4 in. across, and of good substance. It is seldom one sees nine fully-expanded flowers on each side of the tip end of a single spike, as above described; although we occasionally come across a plant bearing fifty or sixty flowers open at once on several great branched spikes. Mr. Turner, of Leicester, grows his noble plants of Phalænopsis on semicircular rafts made of Teak, and surfaced with fresh Sphagnum only; and when I saw them, some months ago, they were perfect in health and vigour. Messrs. Veitch & Sons, of Chelsea, have a noble plant of P. Schilleriana growing on a Teak-wood raft, partially plunged in a pot of fresh open compost, as above described. This specimen has ten or more fine speckled leaves in that state of fresh vigorous health so pleasing to the true plant-grower, and it is now bearing a noble spike of nearly a hundred flowers. I mention these diverse methods of treatment in order to show that there are several ways of growing Phalænopsis in perfection. They grow best, as a rule, in a warm sheltered corner, not far from the glass; and the beginner who would be successful should try them in different positions in his house until he is perfectly satisfied as to the position in which they thrive best. Fortunately, some species of Phalænopsis have been imported in quantity and in excellent condition; their price is, therefore, now moderate. Imported plants generally come on long blocks, and, occasionally, a part of the branch on which they grew in their native habitats is lopped off and nailed to the side of the case with the plant *in situ*. If these plants arrive during dull weather or in the autumn, it is best not to disturb them until the following spring, when they may be removed, and either placed on other blocks or potted as above recommended. When well-bloomed the plants are very ornamental from a decorative point of view or for exhibition purposes; while their waxy flowers are invaluable for cutting, either for bouquets, vase decoration, dinner-table ornaments, or for arrangement along with fresh green Ferns or other foliage in ladies' hair, especially as they last in perfection for a considerable time after being cut. The following descriptive list comprises all the species at present introduced to our gardens:



Section of a lean-to house for Phalænopsids.

P. amabilis.—This is generally known as "the Queen of Orchids;" it has dark green foliage tinted with purple beneath, and its branched flower-spikes are borne very freely, its individual blooms lasting a month, or even longer, in perfection. The flowers vary from 2½ to 3½ in. across, and are of pearly whiteness, except the lateral or side lobes of the lip, which are streaked with rosy-crimson. Good specimens of this plant have from eight to fourteen leaves, and bear spikes from 2 to 4 ft. long. When well grown it is one of the best of Phalænopsids, and its snowy blossoms are useful for cutting. Blume, who was one of the first to figure and draw attention to this noble plant, speaks of a variety having purplish backs to the petals; and Mr. W. Bull recently exhibited a fine form of it under the name of P. erubescens, the flowers of which are large and of good shape and substance, while the central lobe of the lip is conspicuously varied with brown on a yellow ground. P. casta, recently imported by Mr. Low, is a form with indications of grey marbling on the dark green leaves, and the flowers are delicately flushed with rosy lilac. It is a native of Manilla. This plant is the P. aphrodite of Professor Reichenbach, who points out that the P. grandiflora of Lindley is identical with the P. amabilis of Blume. Good figures of the typical plants may be seen in the "Botanical Register," vol. 24, t. 34, and in the "Botanical Magazine," t. 4297.

P. amethystina (P. Wightii).—This pretty little plant is rather rare in collections, and is not so showy as some of the other species; still it is well worth growing, and lasts a long time in bloom. It has deep green oblong foliage, with wavy margins, and bears short-branched spikes, which vary from 3 to 12 in. in length. The flowers are little more than ½ in. across, the sepals and petals being white, dotted with rosy-purple at the base. The lip is of a deep amethyst.

purple tint, tipped with white, and having two slender horns at its base. It is a native of the Sunda Isles, and has flowered with Dr. Ainsworth, Mr. C. Stead, and Mr. Day, of Tottenham. This is a very variable plant, and two or three of its forms are described as species by Reichenbach. P. Hebe, figured in the "Xenia Orchidacea" is a small form, the emarginate central lobe of the lip of which is terminated by two rounded lobes, instead of sharp points. P. Wightii is another form which differs but slightly from the type, and one which has creamy-white flowers. P. deliciosa of the last-named author also appears to be a form of this pretty little plant. In October of last year I saw four or five examples of this neat-habited plant flowering in the Chelsea Nursery, and the different forms of it vary much in colour, the violet colouring of the lip in some individuals being very brilliant. When closely examined it is a little gem, its pearly-white, rosy-dotted sepals and petals contrasting well with the violet or amethystine-tinted lip. Like P. rosea this species has rarely more than three or four flowers expanded at the same time, but as each spike bears from thirty to fifty flowers, it follows that the plant remains in flower several weeks, or even months, together. It well deserves a place in all collections in which modest but beautiful species are appreciated.

P. grandiflora.—This is now one of the commonest of all the species, and may be bought for shillings where guineas were formerly demanded for it. It is one of the best and most profuse flowering of Phalænopsis, and grows well either on a block or in a pot near the light. There are numerous varieties of it in cultivation, all more or less distinct, the Bornean plants being for the most part the best. The sepals and petals, like those of P. amabilis, are pure white, the lateral lobes of the lip being tinted with golden-yellow; and, in the best forms, the tails at the tip of the lip are yellow, spotted with crimson. The best variety is known as P. grandiflora aurea, or Ruckerii, and has the side lobes of the lip deeply stained with golden-yellow, while the petals are very broad and more rounded than is generally the case. The varieties of this grand Orchid not only vary in the size of their flowers, but also in the length and breadth of their light green foliage. Mr. Williams, of Holloway, has a fine plant of it with ten or twelve large leaves borne on a stem nearly 6 in. high, and this is now producing two very strong spikes. Mr. C. Stead, of Baildon, near Leeds, has a fine plant of the narrow-leaved variety, with fourteen or fifteen leaves 10 to 15 in. long, and only 2 to 2½ in. broad. This is a Bornean plant, and flowers very freely, bearing large flowers of good substance. Native of Borneo and Java. I saw a fine form of this plant in Mr. Heriot's collection the other day, and Mr. Bull once showed me a singular little variety, the flowers of which were certainly not larger than a shilling, although in every way perfectly developed. P. grandiflora fuscata is a rare form in which the central lobe of the lip is suffused or veined with dark brown at the base on a golden-yellow ground, apparently analogous to that variety of P. amabilis previously alluded to as P. erubescens. One of the earliest and best figures of this plant is that in Blume's "Rumphia," t. 194-199.

P. intermedia (P. Lobbii).—This plant is very beautiful, having white flowers shaded with rose, about the size of those borne by a small-flowered P. Schilleriana, the lip being of a still deeper rosy-tint. In habit it resembles its allies, and it also does well under the same treatment. It is a native of Manilla. There is a fine variety of this species known as P. intermedia Portei, a native of the Philippine Islands, only a solitary plant having been found in flower by M. Porte, its discoverer. Its foliage is light green above, and purple below, being 8 in. or 10 in. in length. It is one of the rarest of all known Orchids. The flowers are 2 in. across; sepals and petals white, suffused with rose; the lip being of a dark rosy-purple tint. This plant cannot be distinguished from P. amabilis when growing, and is supposed to be a natural hybrid between P. amabilis and P. rosea. The typical plant, according to the sketch in Lindley's "Herbarium," has white sepals and petals dotted with rose at the base, the lip being of an amethyst-purple, which, running into the yellow ground colour at the base of the middle lobe, produces a rich orange tint similar to that observable in P. rosea. The still more beautiful form P. Portei, according to the plate in Warner's "Select Orchids," has the extreme base of both sepals and petals suffused with rosy lilac, but in the splendid specimen now flowering in Lord Londesborough's collection, they are pure white, without even the rosy dots shown in Lindley's sketch. One of the finest of all these varieties of P. intermedia, and certainly the rarest, is P. Veitchii, which has the flower of P. intermedia, but both sepals and petals are suffused with bright rosy lilac, and the lip is still more brilliant, and very delicately veined. The leaves, too, differ from those of all the other forms of P. intermedia in having faint greyish marbling in the way of P. Schilleriana, and the apex of the central lobe of the lip has two sharp teeth, something like the tail of a fish, these being perfectly straight, not tendril-like, as in P. intermedia properly so called, nor arched as in P. Schilleriana. This plant well deserves the specific honours given to it by Professor Reichenbach, and is believed to be a natural hybrid between P. rosea and P. Schilleriana. The last novelty in this group is P. intermedia var. Brymeriana, which has just bloomed in Mr. Brymer's collection, and which is said to differ from all its allies in having the lateral lobes of the lip white, delicately edged with rosy-purple. This is the only form I have not seen, but Mr. Harry Veitch informs me that it is a very desirable species, and quite distinct.

P. cornu-cervi (Stag's-horn Phalænopsis).—This is a peculiar plant, somewhat resembling P. Luddemanniana in habit, but bearing shorter flattened spikes of yellow flowers, blotched transversely with brown. The flattened flower-spike is a peculiar feature; hence its specific name. It grows well treated like its congeners, and is worth cultivation for the sake of variety. It was discovered by Mr. Lobb, and is also known as Polychilos cornu-cervi. Native of Moulmein.

P. fuscata (Brownish Phalænopsis).—This rare plant, which was introduced a year or two ago by Mr. Bull, is very similar to the last-named plant; it has yellow flowers strongly marked with brown, but the lateral sepals are shorter, and the flower-spike is cylindrical, not flattened as in P. cornu-cervi. It is not a showy plant, and only deserves a place in collections as a distinct species.

P. Lowii (Beaked Phalænopsis).—This is a pretty little species that grows best on a block suspended near the light. It bears eight to ten flowered spikes, about 1 ft. high; the flowers themselves being of a rosy-lilac tint. The front of the column is curiously prolonged, like the beak of a bird. In its native habitat in Moulmein, it grows on limestone, fully exposed to the sun, and loses its foliage every year during the hot and dry season; but, here at home, the plant frequently retains its foliage through the winter months. Its leaves are about an inch wide, and 2 or 3 in. long, of a dark green colour, speckled with purple. Mr. Bockett, The Firs, Muswell Hill, has a fine plant of this species, with leaves nearly 4 in. long and 2 in. wide; and it also does well in Lord Londesborough's collection. It should be kept rather dry during winter, and fully exposed to the light, or it is apt to lose its leaves. This plant was discovered by Mr. T. Lobb, and also by the Rev. C. H. Parish, who sent specimens and sketches of it to Sir W. Hooker, under the name of P. Proboscidoides, remarking that the column and its beaked termination resembled an elephant's head and trunk. It appears to have been first flowered by Mr. Walter Beck, of Isleworth, and well deserves the most careful culture. It is figured in the "Botanical Magazine," t. 5351, and a good figure is also given in Warner's "Select Orchids."

P. Luddemanniana.—This is one of the most beautiful and distinct of all the Phalænopsids, having leaves of a bright shining green, and about 6 or 8 in. long. The flower-spikes are very variable in length, but generally about 18 in. or 2 ft.; the flowers being of a soft amethyst-purple tint—in the best varieties blotched with brown—the narrow lip being set with a row of white hairs down its centre. There is a poor variety of this plant, having pale yellow flowers barred with brown, called P. Luddemanniana ochracea, but the amethyst-tinted varieties are best. This plant grows very freely in a pot, and very often produces young plants on its flower-stems. There is a fine plant of the best variety in Mr. Hadwen's collection at Fairfield, near Manchester, which seldom fails to bear two or three plants every year. P. Luddemanniana pulchra is one of the prettiest forms of this plant, the sepals and petals being of a brilliant amethyst or violet-purple tint, with scarcely any traces of the transverse bars or marking which characterise the other forms. Several large-flowered and richly-coloured specimens are now blooming in Mr. Geo. Heriot's collection at Highgate, and the rare pallid form, P. ochracea, bloomed in the Chelsea Nursery last year. One distinct variety of it, having very narrow dark brown bars or lines on the sepals and petals, has been named by Professor Reichenbach P. delicata. All the forms of this plant are good, and vigorous specimens of it are nearly always in bloom. A good coloured figure of it is given in the "Botanical Magazine," t. 5523.

P. rosea (P. equestris).—This is a pretty plant, similar in habit to the last-named, and worth growing in every collection for its free-blooming qualities. Its flower-spikes are of a deep purple colour, and keep on producing flowers for months in succession. The flowers are of a soft rosy-lilac colour, scarcely more than ½ in. across, but the want of size is compensated for by the numbers produced. There is a good plant in Mr. B. S. Williams's collection, and another at Kew, and we have recently seen a very brilliant form of it blooming in Mr. Heriot's collection. It is a robust-growing plant, and comes from Manilla.

P. Parishii.—This is the smallest, and, at the same time, one of the prettiest of all the Phalænopsids. Its leaves are about 2 in. long, and of a grey or glaucous tint. The small violet and white flowers are borne five or seven together on spikes about the same length as the leaves. Although not so showy as the larger-flowered kinds, it is, nevertheless, well worth cultivation. This plant is a native of Burmah, and its thick, greyish, aërial roots throw out short fibres or rootlets, much in the way of P. Mannii. These rootlets enable the plants to adhere firmly to crocks, or the wooden basket in which it is placed, much in the same way as the common Ivy clings to a moist wall or the bark of a tree. The variety figured in the "Botanical Magazine" has a brilliant carmine lip, but in all we have seen this organ is of a dull purple. A pale form of it is figured in the "Refugium Botanicum."

P. Schilleriana.—One of the best of all Orchids with variegated foliage, bearing great branching spikes 3 or 4 ft. high, with from 100 to 200 rosy flowers fully expanded at the same time. Few of the other species rival this when well grown, and the plant is hardier in constitution than any of the others at present introduced. The leaves are of a deep green colour, variously mottled and marbled with silvery-grey. The sepals and petals are of a rosy-lilac colour, the lip being tinted with rose and spotted at the base with warm crimson-brown. It does best in a pot, although small plants luxuriate well enough on flat blocks. It is a native of Manilla. A very soft rosy-coloured large-flowered form of this species was exhibited at South Kensington by Sir Henry Peek, of Wimbledon House, a week or two ago, and a specimen of it, grown by Mr. Cross, of Melchet Court, bore over 300 flowers on three large-branched spikes. When well grown, there are but few winter-blooming Orchids which rival this in graceful beauty and profusion of bloom. Like P. grandiflora, it sports into numerous forms; but as Phalænopsids, like nearly all other Orchids, are reproduced or increased in their native habitats from self-sown and often cross-fertilised seeds, this variation in size, form, colour, and marking, is to be expected, and here, doubtless, we have a good explanation of that Protean variability amongst Orchids which so confused the earlier botanists, to whom their cross-breeding tendencies and habits were unknown.

P. Sumatrana.—The foliage of this plant resembles that of P. Luddemanniana, and it grows well under the same treatment as recommended for the last-named species. The flowers are white, barred with pale rosy-crimson, and about 2 in. or 2½ in. across. It flowered with J. Day, Esq., of Tottenham, in 1865, but is still extremely rare in collections, although well worth growing. As implied by its specific name, it comes from the Island of Sumatra. This plant, which first flowered in continental gardens, is sometimes known as P. zebrina, and the P. violacea of Siebold's "Fl. Jard." 1861, 10, is nearly related to it. Lieut.-Colonel Charlton, of Farm Hill, Bradden, has seen in India a scarlet-flowered species, and has several times tried to introduce it, but has failed. Prof. Reichenbach has described a species under the name of P. Esmeralda, which is said to be near P. rosea (P. equestris), but has more showy flowers. Of this I can hear nothing, nor of Mr. Low's panther-striped Phalænopsid (P. Pantherina). Any tidings of these species, or references to drawings or specimens of them would indeed be acceptable.

P. Mannii (Gustave Mann's Phalænopsis).—This has been long known in the shape of dried specimens, and quite recently I had an opportunity of seeing two vigorous little specimens of it blooming in Mr. Heriot's collection at Highgate. Its leaves are rather thin, lance-shaped, from 6 in. to 8 in. long by 1½ in. to 2 in. broad, of a bright glossy green colour, and much spotted towards the base with dark purple. Its flower-spikes are five or six-flowered in cultivation, although native specimens of it show twenty or more blooms. Its flowers measure about 2 in. across, the sepals and petals being oblong slightly curved, with very singularly-pointed tips. The ground colour is yellow blotched with reddish-brown, the whole shining as if varnished. The lip is very curious, being three-lobed, the lateral divisions white and erect, of wax-like consistence streaked with purple, and between them at the base rises a purple horn and two slender hair-like filaments. The central lobe is lunate (with a central papillose ridge), the margins fringed with short yellowish hairs. It is not very showy, but is far prettier and more graceful than its allies P. cornu-cervi and P. fuscata.

P. casta (Rosy-flushed Phalænopsis).—This interesting plant was recently found in a batch of Orchids sent to Mr. Low from the Philippines, and also the equally interesting P. leucorrhoda, both evidently natural hybrids between P. amabilis and P. Schilleriana. The leaf is that of a rather long-leaved P. amabilis, but on some of the forms there are slight traces of grey marbling. Its flowers are also those of P. amabilis in shape and substance, but the bases of the petals and sepals are suffused with rosy-lilac. This flushing of delicate colour on petals of snowy whiteness is very beautiful, and whether it be species, hybrid, or seminal variety, it well deserves a place in every general collection of these showy plants.

P. leucorrhoda (Low's Hybrid Phalænopsis).—This is another of Mr. Low's recent importations, a plant of which was first exhibited by Mr. Bull, of Chelsea. Its leaves are like those of a pale marked P. Schilleriana, and its flowers closely resemble the blossoms of that species in size and colour, but in the shape of the petals and lip they bear a stronger resemblance to those of P. amabilis which, supposing these forms to be natural hybrids, must be one of the parents, P. Schilleriana evidently being the other. There are scarcely two forms of this plant alike in leaf and flower; indeed some have leaves identical with those of the last-named species, while others have the foliage of P. amabilis with scarcely any indications of the grey marbling so characteristic of P. Schilleriana. The flowers also vary much in colour, from pure white, slightly flushed towards the base of the segments with lilac, to deep rosy-purple. All the forms of it are, however, very beautiful, and well deserve culture, although at present both this and its ally, P. casta, are very rare. Although Lindley separated P. amabilis from P. grandiflora on account of the different colour of the leaves, general shape of the flower, and the crimson-purple streaks on the side lobes of the lips, yet there can be no doubt that they are very nearly related, and now we find P. Schilleriana distinct, as it is both in leafage and flower united to P. amabilis by the natural hybrids, P. casta and P. leucorrhoda. It may be said that we have no evidence to prove indisputably that the latter are hybrids and not natural species or seminal forms, but the great fact remains that in structure, colour, and general appearance, they are exactly intermediate, and the hybridist is quite as likely to be right in assuming them to be hybrids as the botanist is in describing them as species. With cultivators, however, the important fact is that these seemingly intermediate forms are all very beautiful and highly desirable as choice decorative plants.

Dearly Bought.—Mr. Frank Buckland, writing on the subject of sleeplessness, says:—"Everybody knows the taste of Onions. This is due to a peculiar essential oil contained in this most valuable and healthy root. This oil has, I am sure, highly soporific powers. In my own case it never fails. If I am much pressed with work, and feel I shall not sleep, I eat two or three small Onions, and the effect is magical."

Congress of Nurserymen.—At a meeting of the nurserymen, florists, and seedsmen at Crystal Lake, Illinois, Jan. 26th, it was decided to hold a centennial meeting of all engaged in the trade, in the city of Chicago, on the second Wednesday of June, 1876. The objects of the meeting are—(1) relaxation from business; (2) the cultivation of personal acquaintance with others engaged in the trade; (3) exhibition of any new fruits, flowers, plants, or any manufactured articles, or implements used in the business, purchase or sale of surplus stock; and (4) to perfect better methods of culture, packing, and sale of stock.

How Electricity Splits Trees.—The theory that the splitting of the trunks of trees by lightning is the result of the sudden evaporation of the liquids contained within them, has received much confirmation from experiments made by Osborn Reynolds, who succeeded in splitting small sticks of wood by passing the electric sparks through them after they had been impregnated with water. He also burst some glass-tubes which were filled with water, although the same tubes when empty allowed the electric spark to jump through them without in the least disturbing them.

Plant Remedies for Tape-worm.—At the desire of the French Société Médicale des Hôpitaux M. Regnauld has recently procured exact information as to the consumption of tænifuges (or remedies for tape-worm) in the Parisian hospitals during the ten years 1864—1874. The remedies used in Paris are the flower-tops of Kousso, the seeds of Gourds, the bark of the root of the Pomegranate, and the root of the male Fern. A very considerable increase of consumption of all of these appear from the Table; and one may infer that the number of individuals attacked by tænia has increased during these years. From personal observations M. Regnauld was led to think that the quality of certain animal species, consumed in an exceptional manner, during the siege of Paris, played an important part in the unwonted transmission of entozoic parasites. Should this be so, there ought to be a marked difference between the mean annual prescription of tænifuges during the years preceding 1870, and that during the years after it. This he finds is the case. Thus the mean annual consumption before and after 1870, respectively, was, of Kousso, 3900 kil.; 9000 kil.; of Gourd seeds, 3006, 5311; of bark of Pomegranate root, 13,001, 14,025; of rhizome of male Fern, 5147, 12,000. The first and fourth, most in repute, have thus more than doubled.

Petroleum v. Garden Destroyers.—A French paper says that petroleum destroys all insects and banishes rats and mice. Water slightly impregnated with petroleum applied to plants infected with insects will, it is said, destroy the latter at once.

TREES AND SHRUBS.

DENDROPHILIA:

OR NOTES FOR PLANTERS, ESPECIALLY ON EXPOSED SEA-COASTS.

By SALMONICEPS.

(Continued from p. 230.)

Undergrowth.

When old woods, which perhaps have been long neglected, receive the required thinning, they often look so bare that the owner is dissatisfied, and proceeds to fill them up with Spruce, Silver Fir, or other trees, which will be overtopped and smothered long before they come to any size, for it is astonishing how quickly even aged trees will spread when room is given. The boughs, which have all been thrust up to light and air, gradually lean outwards and burst out all over buds, and in a very few years the spaces between the stems will be filled with heavy foliage. There are only two trees which can be grown successfully under the shade and drip of old wood, namely, Yews and Hollies. These will make a beautiful undergrowth even in a very dense wood, provided it does not consist of Beech, or any kind of evergreen trees. These two beautiful trees should be largely planted, as they are always ready to fill gaps made by the wind, and no other trees known to the writer, except perhaps the Laburnum, thrive so vigorously under old wood. And this suggests one word to the owners of parks. Let no lodges, cottages, or human dwellings high or low be overhung by trees. It is a vital matter. No consideration of beauty or association should be allowed to endanger human health. That it is so endangered in too many instances from ignorance of the truth is unquestionable, for too often do we see park lodges picturesquely situated in the dense shade of old trees. No life can be vigorous in semi-darkness, so if the trees cannot be sacrificed, the cottage should be pulled down. Mr. Howard Barrett, in his book on "The Management of Childhood and Infancy in Health and Disease," quotes the following case in point:—"A French surgeon's attention was drawn to the mutilated condition of some large Mulberry trees, whose boughs had overshadowed a schoolroom in which several girls with chronic diseases were educated. On his inquiring why they had been cut, he was told that the deep shade produced by them had visibly aggravated the scrofulous disorders rife among the girls, and that a very favourable change in their condition had taken place since their exposure to free sunshine." We may believe that in a hot climate the old Mulberry trees formed the pleasantest feature in the house, as seen from the outside, yet nothing could have justified the owner in not sacrificing them under the circumstances. The principle contained in this example may be widely applied by most landowners, and should be carefully attended to and carried out.

Fencing.

It does not enter into the scope of these jottings to compare the relative cost of different modes of fencing plantations. The subject has been so fully entered into, not only in such comprehensive treatises as Brown's "Forester" and others, but from time to time in many able papers in the "Transactions" of the Highland Society, that no one can be at a loss to estimate the expense for himself; besides which, the fluctuations in wages and in the price of iron, and local custom and material, are so constantly modifying what may be laid down as rules, that the matter must be left eventually to the judgment of the planter. Many hints, however, in local methods of fencing may from time to time be picked up and introduced with advantage into districts where the bondage of custom or the abundance of any particular material has firmly established an undesirable kind of fence. An instance may be taken from the method pursued in so many parts of Scotland of fencing plantations with stone walls. As regards the mere question of what pleases the eye, the stone-wall may be condemned at once, for no kind of fence destroys the beauty of a landscape more thoroughly than the grim, uncompromising "stone-dyke." It is moreover in exposure a thoroughly bad fence for young wood. The wood immediately behind it is sheltered till the young shoots reach the level of the coping, and then the blast shaves along the top with double force. A hedge and ditch, a stake and bound, or even a wire fence is much better for the young wood. No fence, in the writer's opinion, looks better, or is more thoroughly sylvan in character than a railing made of the poles thinned out of adjacent woods; and where wood is plentiful, it is probably as cheap a fence as can be made. Wire fences with iron standards are very good in park scenery, as, with a little exercise of judgment, they can be made almost invisible; but great damage is sometimes done to wire fencing in a gale of wind. One tree falling across a wire fence of course spoils the whole length. The terrific gale of February, 1868, will long be remembered in certain parts of central Scotland for the immense havoc done in a few hours. It was singularly local in its effects, spreading destruction in certain parts of Stirlingshire and Perthshire, while places on each side of its track escaped almost entirely. At one place, not far from Stirling, the trees blown out in those few hours were sold on the ground for £2000. The woods at this place were nearly all enclosed with wire fences, and no one who saw the scene of destruction will ever forget it. Splendid trees, principally Scotch Fir and Larch, lying in ranks of scores and hundreds, and hardly a length of wire fencing but was broken and twisted. Nice judgment is required in tracing the outer boundary of a wood, especially in hilly or undulating ground. Too often the contours of the ground are disregarded, and belts or clumps are laid out in a fashion distinctly opposed to the natural. Figs. 1, 2, and 3 may be taken to illustrate this point. They represent a hill of the most ordinary character, as like an inverted bowl or a molehill as possible, but the natural arrangement of the woods in fig. 1 gives the hill such an imposing character that it is difficult to believe that the contour of the ground is precisely the same as in figs. 2 and 3. Fig. 3 is a sketch from memory of a hill visible from the line of railway between Beattock and Carstairs. Sometimes an attempt is made to avoid formality by an unmeaningly serpentine outline, the effect of which is often as artificial as a rectangular design. On level ground the line of boundary is of less consequence, as less of it is visible at once. Straight lines in such a position are very often as good or better than curved ones, and the labour and expense of fencing is, by their adoption, considerably reduced, especially if wire fences be used. But advantage should be taken of every rocky knoll or clump of Furze at the edge of the wood, behind or through which the fence may be run with good effect. In park scenery no fence should be retained longer than necessary. The pictorial effect of removing fences as the trees within them are large enough not to suffer from cattle is invariably good; at the same time great caution must be observed not to throw a wood open too soon. Most forest trees are ready to stand unfenced when from fifty to eighty years old, but this period varies according to soil and climate. An intermediate stage may be adopted by removing the outer fence and placing a new fence within the four or five outer ranks of trees. It should be remembered, however, that throwing open a wood is a very delicate operation; the writer has known cases where it has been done too soon or too suddenly, which have resulted in the almost total loss of the wood, partly from the sudden chill to the stems caused by simultaneous thinning and removal of the fence, and partly from the disappearance of undergrowth and consequent denudation of the roots. But the results in every case where fences have been successfully removed from woods are so markedly picturesque that one should ever be looking out for a suitable opportunity of removing them.

Best Trees for Sea Exposure.

The British Isles have such an extent of sea-coast that in proceeding to consider the trees which experience has proved to be useful for profit and ornament, it may be well to select those trees which can be thoroughly recommended to resist a direct exposure to the sea-blast. The list is very limited according to present knowledge, but even this fact ought to have its merits, because when the properties of these trees are realised, there will then be no doubt what species to put next the sea. Let it be supposed that a plantation is to be made in an extreme maritime exposure, such as many parts of the west coast of Scotland. The climate is very moist, the soil varies from almost pure sand to hazel loam, the latter genial but shallow, and the subsoil glacial till. In such a position, of course, the wood is mainly for shelter; it is half-a-mile long, less or more, and from 200 yards to 300 yards deep. The old-fashioned way would be to fence it in probably with a stone-dyke, and plant the whole breadth with mixed trees. The result in course of time would be a certain amount of shelter, such shelter as may be had from a dense scrub, which begins to develop into something like trees at the leeward verge of the enclosure. Far "better a wee bush than nae bield;" but woodcraft can accomplish better things than these.

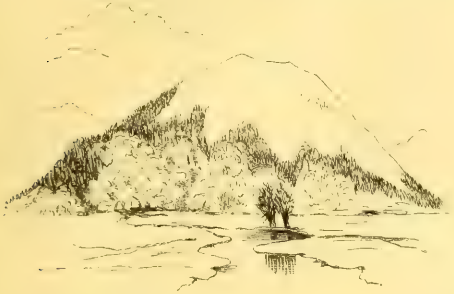


Fig. 1.

To begin with, the fence facing the sea. Perhaps it has to be planted in shifting sand, and will constantly be drenched by showers of spray. Let it be composed of the Sea Buckthorn (Hippophaë rhamnoides), a grey-leaved, deciduous orange berried shrub, with strong thorns, which can be bought cheaper than Holly; it will very soon, in such a position, make an impenetrable fence, growing eventually from 10 to 15 ft. high, and sending up numerous suckers all round. Of course it will require protection from cattle until well established into a hedge; such protection may be given by a wire fence or wooden paling. The worst fence that could be put in a situation such as this would be a stone-wall or earth-bank. This Buckthorn is not particular about soil. Plant it anywhere near the sea, and it will soon make itself at home, but it is especially so in drifting sand-hills, whose vagaries it is capable of arresting. Then, behind the Buckthorn, you may proceed to plant the prince of all sea-side evergreens, Pinus Pinaster, the Cluster Pine. Having already in Vol. VI. of The Garden (p. 566) described and illustrated the merits of this tree for sea-side planting, it is unnecessary to say more than recommend its use along the windward side of the imaginary wood we are planting. Three or four rows of this Pine will raise sufficient shelter for less maritime species; next to it may with confidence be placed three other Pines and a Cypress, namely, Pinus austriaca, P. laricio, and P. insignis, and Cupressus macrocarpa. The two latter, though of comparatively recent introduction, have already proved themselves to be of high value in sea exposure. Although we are supposed to be planting for shelter, yet the value of the timber may be taken into account. The timber of the Pinaster is of little value, being very light, and serviceable only for packing cases and such purposes. Formerly the Oranges exported from the Azores were packed in cases made of Pinaster Deal, but of late years the Japanese Cedar (Cryptomeria japonica), a tree of more rapid growth, and even softer and lighter wood, has been planted for that purpose. The timber of the Austrian and Corsican Pines is extremely valuable, being both strong and durable; and the timber of Pinus insignis and Cupressus macrocarpa is said to be of good quality. If any marshy pieces of ground are included in the proposed wood, they should be planted with Abies nigra (the Black Spruce), an excellent sea-side tree, which delights in cold wet soils. Now a beautiful wood may be formed with these materials alone—a truly evergreen wood, for none of these trees change colour, except occasionally the Corsican Pine, even when under the influence of the sea-spray; but suppose a belt of these 100 yards wide has been planted, and it is wished to introduce some other forms of evergreen or deciduous trees, they may be selected from the following list, the names being given according to the degree of hardiness in such a situation:—Sycamore, Scotch Elm, Scotch Pine (especially in clay soils), Beech, Birch, Huntingdon Willow (for wetter parts), Silver Fir, Ash. As undergrowth, none is more beautiful or more suited to a sea exposure than Holly, but it is unfortunately the case that it is no use planting either it or Laburnum (another good small sea-coast tree), unless it can be protected from rabbits. Smaller undergrowth may be obtained by the following rabbit-proof plants, which should, however, not be planted till the wood has received its second thinning, unless some open spaces can be found for them along the edges of drives, &c. They are Daphne laureola (the Spurge Laurel), Daphne mezereon, Berberis Darwinii and dulcis, Mahonia, Hypericum calycinum, and others, Vinca major and minor, Ruscus aculeatus (Butcher's Broom), Fuchsia Riccartoni (in open places near the sea), Rhododendron ponticum, Euonymus europæus (Spindle tree), and E. japonicus.

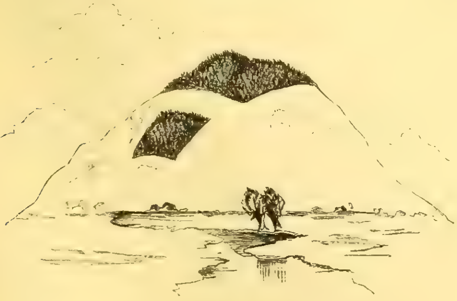


Fig. 2.

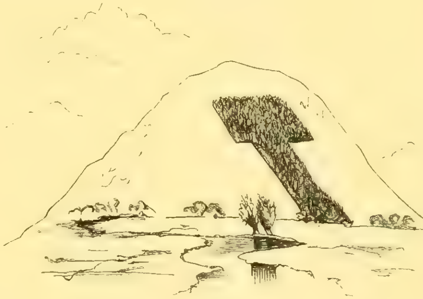


Fig. 3.

Choice Trees and Shrubs.

With the above-named well-proved species and varieties a wood may be formed which will not only thrive under conditions which would cause the failure of indiscriminate planting, but which may be made highly ornamental at the same time. We may now consider some of the principal and most desirable species of Conifers and hard-wood trees which have been introduced of late into the country, and which, as a rule, require more shelter than our hardier native trees. One of the commonest errors which mislead gardeners, foresters, or amateurs, consists in the idea that every novelty is a desirable acquisition. The old-fashioned and, till recently, nearly obsolete system of flower-gardening, which we are now welcoming back among us, was brought into discredit by this very thing; every attainable species of hardy plant was indiscriminately added to the herbaceous collection, till the collector one day awoke to the fact that, although he might have a very large collection of exotic hardy plants, yet half of them were no better than weeds. Unless a botanical collection is desired, all gardening depends upon judicious selection, and, on a larger scale, so does forestry. Coniferous trees, especially, have of late years been introduced from all parts of the earth in such number and variety, that it is useless, except in the very largest parks, to attempt a collection of all the known hardy sorts. Hence it will be observed that the list which follows is very far indeed from being a comprehensive one; but an attempt has been made in it to name only those species which have been ascertained to be equal or superior in this climate to those that we already have. Where so much material for choice exists, the only safe recommendation of a new tree is an affirmative answer to each of the following questions:—"Is it perfectly hardy in all seasons of our climate? Is it markedly distinct from species already in common cultivation? If so, is it superior in beauty, or productive of better timber, or more quickly remunerative than those we have?" Nothing but the highest and most distinct degree of beauty justifies the substitution of new species for old and tried native and exotic trees, for we already have among our Scotch Pine and Silver Fir, Oak, Beech, and countless others an immense variety of beauty and usefulness.

Abies.

To begin then with a selection of Coniferous trees, the first on the list is Abies, or the Spruce family. Although there is no indigenous member of the family in this country, it has long been known as familiarly as most native trees from the extensive use of A. excelsa (the Norway Spruce) as a forest tree, and also in a less degree A. nigra (the Black American Spruce). The Norway Spruce is very impatient of the direct action of sea-breezes, and should not be planted till a certain amount of shelter can be obtained for it. The Black American, however, is an extremely good sea-coast tree, and prefers a damp cold soil. It is not worth planting in dry, sandy soils, but in a suitable situation; although the growth is somewhat slow, it becomes a very beautiful tree, with bluish-green foliage and purple cones. Those who have only seen it in dry soils have little idea of its beauty; for it is truly, when in health, more worthy of admiration than many novelties which have more attention bestowed on them.

Abies Albertiana (syn. Mertensiana).—This is the most graceful of all the Spruces, and may be described as combining the foliage of the well-known Hemlock Spruce (of which it used to be considered a variety) with the growth and drooping leaders of Thuja gigantea or Cupressus Lawsoniana. Of perfect hardiness, very rapid growth, and distinct habit, it can be very highly recommended for sheltered situations; but it is unsuited for exposure to constant high winds. A year's growth of a specimen at Culcreuch, in Stirlingshire, exceeded 7 ft.

Abies Douglasii.—There is now no doubt that in this tree we have one of the most valuable additions to our forest trees, whether in an ornamental or commercial sense, that has ever been made. It should be extensively planted, but not in extreme exposure, as the annual growth is so rapid that the leading shoot becomes deflected under the influence of long prevailing winds. It is perfectly hardy, and does not seem particular as to soil.

Abies Menziesii is a fine forest tree, distinguished from other Spruces by its glaucous foliage. It is very symmetrical, and of rapid growth, but is more likely to be found valuable as a timber-producing tree than on account of any special charm that it can give to the home landscape. It is undoubtedly hardy, and prefers a somewhat damp soil. It is not calculated to thrive in a directly maritime exposure.

Abies morinda (syn. Smithiana, Khutrow), a beautiful Spruce, which attains to a great size in the Himalayas, where it is found at greater altitudes than the Deodar. It is, unfortunately, not so hardy as the latter tree, and liable to be injured by late frosts; but in temperate districts a sheltered glade may well be devoted to the Khutrow, where its rich drooping foliage will be protected from high cold winds.

With these four Spruces, in addition to the Norway and Black Spruces already mentioned, the planter may be satisfied that, according to present experience, he has the pick of the family. The Hemlock Spruce rarely attains greater proportions in this country than those of a large shrub, and Abies orientalis, though very neat and hardy, is not distinct enough in character, and is too slow in growth to warrant its substitution for the common Norway Spruce. The remaining species of Coniferæ will be considered in another paper.

The Japan Pear on Walls.—I was reminded to-day (14th March) of the large tree of the single red Camellia in the gardens at Caserta by the size and beauty of the deeply-coloured blossoms of Pyrus japonica on the wall of a cottage on a cold English hill-side. The wall was covered from top to bottom, and from one end to the other, with this lovely early tree, every blossom, slightly protected by an eave of 6 in. or so, being bright and perfect. The flowers had not yet opened on the part of the tree trained over the porch, and which had not the benefit of the wall.—W. R.

Lilac Hedges.—Few deciduous shrubs form more charming hedges in early summer than Lilacs. We have a large orchard enclosed by one here, a wire fence being added as a safeguard, and most lovely it is when the Lilacs are in blossom. The only pruning required is thinning out the longest straggling shoots annually, so as to keep the base thickly furnished with young growth. Hedges of this kind should not be clipped, as in that case most of the bloom would be sacrificed, and a stiff formal aspect imparted to them which would rob them of half their beauty.—J. Groom, *Henham.*

Cupressus Lawsoniana in Flower.—In No. 187, Vol. VII., of The Garden, you gave a coloured plate of this tree. I admired it very much, but at that time I had never seen the tree itself in flower. A specimen here, which was planted about seven years ago, I am told, was not doing well and never flowered. Two years ago I removed it to a black peaty part of the shrubbery, and last year it grew vigorously and made a leading shoot 2 ft. 9 in. long. At the present time it is covered with bright red little flowers from top to bottom, and very beautiful. It is now 14 ft. in height.—John Clarke, *Cork.*

Tree Planting in Public Parks at Southampton.—Mr. Rogers, the well-known nurseryman of Southampton, and this year sheriff of that town, has just been presented by the Corporation with an illuminated address of thanks for his valuable gift of trees and shrubs to the public parks during the past winter. Southampton is peculiarly well favoured in the matter of public lands, and the fine ranges of parks in the very centre of the town are at once breathing spaces and ornamental gardens that cannot be too highly appreciated. The greater portion of the trees are yet young, but a future generation will have boundless cause to be thankful for the foresight that provided them and their children with such delightful spots wherein to find pleasure and means of recreation.

Fertilisation of the Aucuba.—An interesting instance of the fertilisation of the Aucuba has been brought under my notice lately. In the nursery grounds of Mr. Hoade, at Addlestone, are now standing some plants full of berries. He does not possess, and never has possessed, any male specimens; and the nearest one in the neighbourhood, to his certain knowledge, is fully half-a-mile distant. This has now occurred two years in succession; those plants, however, which bore berries last year have none on this, and *vice versa.* This instance is more remarkable than the one already cited in your columns—in which although at some distance the source of fertilisation could be traced—in the case I now mention pollen must naturally have found its way to the plants which have fruited; but in what way—by what agency? It is in my opinion a striking warning to hybridisers, and proves how very carefully the process of isolation should be carried out to warrant any certain conclusions being deduced from experimental cross-breeding.—John Cornhill, *Byfleet.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Abies grandis and its Forms.—Mr. Hoopes, of West Chester, a horticulturist of much experience among Conifers, considers that A. grandis is a good species, but that A. Parsonsiana, A. lasiocarpa, and A. Lowiana are well-marked forms of the same, varying in length and shape of leaf, and size of cone.

Purple-leaved Peach.—This is figured in the "Illustration Horticole," t. 221. The leaves are less purple when the fruit is ripe than in spring and early summer, when the growth is immature; but as represented they are still distinctly coloured a fine bronzy-purple on the under side, and purplish-green above. The fruit is of medium size. We doubt if it will prove of great value as an ornamental shrub.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Late Vineries containing Greenhouse Plants.—Where amateurs possess only one house, in which both plants and late Grapes are grown, the plants will have to undergo some sacrifice if the Grapes be desired to ripen to perfection, as the Vines, to assist their breaking, will require to be kept closer than will suit the health of the general body of greenhouse plants; and if this be not done, especially in the colder parts of the country, there will not only be the difficulty of obtaining a crop of late Grapes properly matured and of the requisite quality, but also of ensuring the proper ripening of the wood for the coming year, which is quite as essential to the Vines as the well-being of the current crop. From a house of the above description all such plants as Pelargoniums, both show and fancy kinds, Cinerarias, Primulas, Epacrises, herbaceous Calceolarias, Lilies, and Kalosanthes, should be removed, and may now be accommodated in pits and frames; even if there be no means of warming, the plants can be kept secure by covering with mats on frosty nights. Zonal Pelargoniums will bear the treatment which the Vines require better than the above-named plants, but it is preferable to have them removed. Autumn-struck bedding plants should also be put elsewhere, or they get drawn up weak, and will be in much worse condition at the time they should be planted out than if kept where they will be cooler. Acacias, Genistas, Fuchsias, Amaryllises, Azaleas, Abutilons, pot Roses, Ferns, Cassia corymbosa, Epiphyllums, Habrothamnus, Lantanas, and Vallotas, may remain, as they will bear the more confined damp atmosphere which the Vines need. Some air should be given in the mornings, damping the paths and walls in the middle of the day, closing the lights early in the afternoons, and syringing the Vines overhead; so treated they will soon break, when they can be tied up in their places, previously examining the wires to which they will have to be secured. It is a very common error with those who have not had much experience in Grape culture to have the wires in their vineries too near the roof, thus not allowing sufficient room for the leaves to grow without touching the glass, in which case they cannot escape being injured. Another cause of injury from the wires not being sufficiently far from the glass is that in tying up the young shoots in order to keep them as low as the arrangement of the wires will permit, some are liable to break out. A distance of 15 in. from the roof is near enough for fixing the wires.

Vines, that were started earlier and are progressing in growth, must receive regular attention; as they advance it will be easily seen which shoots show the most promising bunches, removing at once those that are not required. It is a great mistake to allow, as is frequently the case, a quantity of useless superabundant shoots to remain longer than necessary, as such neglect draws a certain amount of support from the Vines to no purpose. Young Vines that have been planted two or three years, and have nearly or quite extended to the length of the rafters, should not have too many spurs left upon them. There is no doubt that the root-formation of Vines is correspondingly assisted by the increased number of fully-developed leaves, consequent upon the reciprocity between leaves and roots in any individual plant of whatever kind; but, with Vines, especially young ones, it is a common occurrence to see almost every eye that the canes have produced allowed to grow, thus crowding them with double the number of shoots for which there is room, the result of which is that the leaves have not more than half the space necessary to permit their getting the requisite amount of light and air essential to their full development. When a spur has been allowed to grow from all, or nearly all, the eyes, a reduction of one-half at least would be an advantage; and, if not done at the time the Vines were pruned, the eyes, as they push, may be rubbed off, and the spurs removed after the shoots to be retained have pushed; or, in the case of Vines that have made some progress, the superfluous spurs may at once be taken off, the beneficial effects resulting from which will be seen in the autumn by the bearing wood having double the strength it would have had if all had been left to grow; in the case of late Vines being so treated, a much better chance of getting the wood well ripened is afforded them. As soon as they begin to bloom, cease syringing, at all events until it is over; the most approved practice with experienced Grape-growers is not to use the syringe after the Vines have bloomed, on account of its diminishing the bloom upon the berries; but with amateurs, especially when they have other plants to grow in the same house, it is safer to advise the syringe being again employed daily after the fruit is set until the time it begins to colour, as an important safeguard against red spider. See that all soft-wooded plants from this time forward receive enough water—as the time is at hand when growth progresses at a rate that necessitates considerably more being given than earlier in the season—otherwise the leaves will suffer. All subjects of the description above mentioned that aphides will live upon should be examined thoroughly every ten days, as at this season, more than any other, these insects make their appearance; and if once they get established upon even a few of the plants they quickly spread to others, doing serious harm, and requiring a great deal more labour in their destruction than if got rid of as soon as they appear. When a number of plants are affected with these insects fumigation is, no doubt, the best remedy; but where only a few out of a large quantity are at first attacked, it is not desirable to smoke the whole house or pit; the affected plants may be removed and fumigated by themselves under anything that will confine the smoke; but it frequently happens that plants in small frames, when subjected to a sufficient volume of smoke to kill the insects, have their leaves injured. This arises from the fact that the smoke, escaping so much sooner from a smaller space in the frame than in the larger house, needs to be more dense in the former to destroy the aphides than the plants can bear; for this reason I should recommend amateurs, at this season of the year especially, to keep always by them ready for use a bucket full of Tobacco-water, so that any affected plant can be at once dipped, or held over the vessel until it is thoroughly washed by syringe with the Tobacco-water; if this be effectually carried out, not only will the living insects be destroyed, but the eggs also, which latter the smoke will not affect. I have for many years found this not only an effectual way of dealing with these insects, but a great saving in labour. Where Roses, which are more susceptible to aphides than any other plants, are grown in pots, the treatment just named will be a simple and effectual means of dealing with them. For Fuchsias, the leaves of which at this season cannot bear smoking, as also the young fronds of some Ferns, such as Adiantums, dipping and syringing are much to be preferred to fumigation.

Chrysanthemum cuttings that were advised to be put in some time back will now have filled their little pots with roots, and should at once be moved into others 6 in. in diameter, using three parts good loam to one of rotten manure and sand, in proportion to the quantity of sand which the loam contains naturally, as the compost should be open enough to allow a thorough drainage of the copious applications of water which these, more than any other plants grown in pots, require. See that they are free from aphides, and, if necessary, dip them in Tobacco-water whilst they are in the little pots; at the same time in all cases take off the tops to induce them to break several shoots, except where they are required to produce a limited number of the finest flowers. When this is the object, it is usual to let the plants grow on without stopping; and when in bloom in the autumn, in groups of two or three colours together on the floor of the greenhouse, amongst Camellias, &c., they are very effective. When all the powers of the plants are concentrated in the production of a very few blooms, Chryanthemum flowers individually last much longer than if grown in the ordinary way, a quality not generally noticed. When there is any deficiency of plants struck from cuttings, or where there has been an omission in planting them in time, the old stools that flowered last autumn should be broken up, shaking off the soil and dividing them into small pieces. When this method is followed the pieces used should not be too large; two or three of the young sucker shoots that spring from the crown with some roots attached are of sufficient size, for, if large pieces be used, they require pots of an increased size to support them, otherwise they get bare at the bottom before they flower, a condition that spoils their appearance, however numerous or fine the blooms. These easily grown and most useful of all autumn-flowering plants are much less frequently seen well grown than they should be; if they be properly attended to from this time all through the season, they will furnish a magnificent display during the late autumn and early winter. There is no flower that I should so much recommend to amateurs who are commencing plant-growing as the Chrysanthemum, from its easy growth; nevertheless, to be successful in its cultivation, it must never be neglected. A cold frame, where the plants will get plenty of light, is the best place for them now, giving air as required in the day-time, and covering with a mat when there is an appearance of frost.

Lilies in pots will now demand attention. It is a very common occurrence (even when these are accommodated with a light position in a greenhouse, pit, or similar situation) to let them remain too long, so that the shoots get drawn; where this is permitted to occur, no treatment during the season will remedy the defect, which generally ends in the bottom leaves turning yellow and falling off before the flowers are open, completely spoiling their appearance. To avoid this the plants should be moved to cold frames if possible, as soon as they show above the soil; here they should be kept with their tops close up to the glass; the lights should be drawn completely off during the day—unless there is danger of the soil getting saturated by too great a downpour of rain—putting them on again at night, but leaving them tilted, so as to allow an abundance of air when there is no likelihood of frost. The frames should be placed where they will get all the sun and light possible. If frames be not available, instead of keeping the plants to get drawn in a house, put them under a south wall with a slight framework over to protect from frost, laying the pots down on their sides when the weather is very wet. Where a good selection of Lilies is made they are essentially amateurs' plants, as they afford a succession of bloom lasting a considerable time, and are easily grown, providing a few essentials are not lost sight of. To the fact of their not dying right out when subjected to unsuitable treatment may be attributed their being frequently seen in very poor condition.

Greenhouse Plants.

Solanums.—Few plants are grown to the extent these now are, and certainly none are more cheerful-looking or useful for winter decorations when laden with their rich glossy red berries, a condition in which they may be easily had by starting early with their propagation either by cuttings or seed sowing. If the former method be resorted to, no time should be lost in getting them in, that they may form strong plants for planting out at the end of April, as the quantity of berries they bear depends very much on the early growth they make. Any seedlings now up should be pricked out thinly in pans or pots containing light rich vegetable mould, and then placed where they can be afforded a gentle moist heat, for the purpose of pushing them on. The standard form is perhaps the most desirable to grow them in, as that is most suitable for table decoration, Solanums being largely used and well adapted for that purpose. To have them with clean straight stems, all side growth should be nipped out of the young plants, so that the strength of the roots may be concentrated in the main stem, and that the desired height may be attained as quickly as possible. As growth proceeds they must be tied to neat sticks to keep them straight and support the head after it is formed. If bush-shaped plants be desired, they should be stopped when 3 in. or 4 in. high, for the purpose of developing side-shoots, which should again be stopped after they have attained the same length. As old plants become shabby from the berries shrivelling or leaves falling off, prune back at once and place in gentle heat, so as to get them started again ready to plant out next month. Solanums so treated will form large specimens that are sure to be laden with berries, if kept well supplied with water during the summer.

Primulas.—Seed for early blooming, if not already sown, should at once be got in. Place the pots or pans where the soil can be kept moist till the seeds germinate without resorting to the watering-pot. A hand-light, cloche, or piece of glass laid over the pan and shaded so as to exclude the light, will secure the conditions favourable to a quick germination. Sow in a light rich vegetable soil, such as thoroughly decomposed leaf-soil or fine peat, to which a little loam may be added. Old plants from which seed is desired must be kept on light dry shelves well up to the glass so as to insure the pollen becoming ripe and freely dispersed before the flowers fall off and carry the anthers with them. Double varieties that have ceased blooming should now be divided, and, in doing so, as much of the old root-stem as can be got should be secured to each cutting or division. The number of these need only be limited to the quantity of separate crowns the plants possess, for each of these may be split off. Carefully remove any dark-looking portions of old leaf-stalk that appear likely to rot, and so cause the destruction of the cutting. When this is done and they are properly trimmed they should be inserted singly in small pots filled with a sandy peat or leaf-soil. Make a hole in the centre in which to put the cutting, and fill round with sharp sand; place the pots where they can receive gentle heat and be kept moist without the aid of watering, as this should not be applied till the roots begin to form, if the cutting can be kept fresh till that time. To assist this operation the pots should be plunged in damp Moss or Cocoa fibre to prevent the air acting on them. A light shelf in a close moist house or pit, or a propagating box where they are not kept too confined, will be found the best place for them. Besides the old double white there are now many beautiful coloured sorts that are very desirable for the sake of variety, and as they all last in bloom much longer than the single kinds, they are each deserving of extensive cultivation.

Linum trigynum.—There is generally a great scarcity of yellow flowers, especially among greenhouse plants, and as L. trigynum blooms naturally throughout the winter without the aid of artificial heat, it is doubly welcome on that account. When well grown and free from spider—an insect to which it is very subject—it blooms in the most profuse manner possible, every twig, however small, being usually laden with a number of flowers that keep on expanding in regular succession. In clearness of colour, they are quite equal to Allamandas, and are quite as indispensable for warm greenhouse or conservatory decoration during the winter months as Allamandas are for the summer. Old plants that have now ceased blooming should at once be placed in moist heat, to realise an early supply of cuttings. See that they are free from red spider before attempting to propagate or starting them to grow for that purpose, as they can be much better cleaned before the young tender leaves appear than afterwards. Keep them well damped overhead to encourage young growth and prevent the spread of insects. Cuttings taken off with a heel strike readily in close moist heat, after which they should be kept growing on in a damp atmosphere, such as Fuchsias or plants of that kind delight in. A loose open soil suits them best, and this should consist principally of peat and loam, in the proportion of two-thirds of the former to one-third of the latter. As they require liberal supplies of water while making their growth, the pots should always be well drained. Dryness at the roots is sure to induce red spider, and to prevent any rapid changes taking place with regard to the soil, the pots should be kept plunged in some light loose material.

Hardy and Half-hardy Ferns.

These will now be pushing up their young fronds, and, where well sheltered from spring frosts, should at once have any protection, such as Bracken or any similar covering, removed from their crowns. If their winter covering be allowed to remain on after they once make a start, it is almost impossible to remove it without damaging the young growth, the effects of which will be seen for the rest of the season. In the case of the more tender varieties this may be replaced by a mulching of half-decayed leaves, which will not only afford the necessary protection now, but will be of great benefit during the summer by giving a gentle stimulus to the roots besides keeping them in a uniform state as to moisture. As the fronds protrude through this they should have the additional shelter of a few branches of evergreens stuck round them, so as to ward off cutting winds and late spring frosts, that would otherwise be fatal to the young growth. Even the hardiest are very liable to injury just as they are unfolding their fronds, and, therefore, the site for the out-door Fernery should be as sheltered as possible. Where it is desired to divide and increase any, or to effect a re-arrangement, now is the best time to commence such operations, as at no season do Ferns transplant so readily, and with so little check to their future development, as when they are just beginning to grow. In dividing them, it should be done with a sharp instrument, making a clean cut right through the roots. See that each piece has a separate crown, or that the fleshy roots of such as creep under the surface have the necessary eyes to push into growth. Where peat is not easily accessible in sufficient quantity to mix with the loam for the purpose of planting the more choice kinds, it may be substituted by a good dressing of leaf-soil, which answers almost equally well. If the latter can be obtained in sufficient quantities to top-dress each of the plants they will be materially benefited. Those who contemplate planting out any supposed half-hardy varieties should wait till all danger from spring frosts is over, and meantime the plants should be retarded as much as possible, that they may grow altogether in the positions assigned them, as that would afford them a much better chance of establishing themselves. Several of the best of the greenhouse kinds will stand out in loose well-drained soil, with slight protection during the winter.

Woodwardia radicans.—This is one of the grandest Ferns, and is sure to command admiration if placed in a position where it can show off its magnificent fronds, which are even finer and richer in colour, in favourable situations out-of-doors, than they are under glass. As these grow from 3 ft. to 5 ft. in length, and droop in a gracefully pendent manner, they should be placed in suitable elevations or on the sides of steep sloping banks where the fronds can assume their natural drooping habit and be seen to the best possible advantage. A noble Fern of this species has stood for years in the Fernery here with only the protection of a few leaves or brakes thrown over the crown; it will be found quite hardy in many localities. Cyrtomium falcatum, another fine Fern, also should be in every collection, either indoors or out, as its rich shining deep green fronds render it quite as striking among Ferns as the Holly is among evergreens. It will stand ordinary winters without any protection whatever, while its perfect safety may be insured by scattering and making secure a handful or so of leaves over the crown. Onychium japonicum is a very elegant variety, alike valuable in the greenhouse as in the hardy Fernery. The fronds of this, when ripe and mature, are valuable as an accompaniment to flowers, whether for bouquets or for table decoration, and they continue fresh for a long time; they are very light and feathery in appearance on account of the fine divisions of the fronds. This Fern will be found nearly hardy in most situations, and may be kept quite safe by protecting the top of the soil over its roots.

Pteris scaberula.—This beautiful Fern, with the protection of a little leaf-soil scattered over its small wiry-looking stems, may be safely wintered in the hardy Fernery. Being a surface-rooter, it should be planted in a rough peaty soil. The fronds of this grow about 1 ft. high, and are as elegant as any of the Cheilanthes. No Fernery, however small, should be without it, as it is one of rare beauty, either for baskets or planting out on a rock in the natural style, on which it rambles and grows in perfection.

Pteris cretica albo-lineata.—This is a very distinct variety, having a yellowish-white band down the centre of each pinna, and on that account forms a pleasing contrast with the green-fronded Ferns. It will be found sufficiently hardy for outdoor cultivation with the same kind of protection recommended for the others. The fronds of this show well among flowers, and it is deserving of a place even among the most select kinds in the greenhouse. Lomaria magellanica and chilensis are both noble-looking Ferns, that should have a place in every collection, and are alike valuable both indoors and out. L. chilensis has fronds upwards of 3 ft. in length, rising from fast creeping stems that soon spread in various directions and make large handsome masses, which have a strikingly pretty appearance. L. magellanica has fronds of about 18 in. long and from 6 in. to 9 in. wide, spreading and arching in the most graceful manner. Onoclea sensibilis is likewise a grand Fern, having fronds of a most pleasing pale green colour, varying in height from 1 ft. to 2 ft. The creeping stems travel rapidly just beneath the surface of the soil, where the latter is loose and favourable. To have it in perfection it should have a damp situation, as it luxuriates in moisture. It is extremely ornamental, and quite distinct from any other in cultivation.

Struthiopteris germanica is a very stately-habited Fern, having fronds upwards of 3 ft. long, arranged much in the same way as the feathers of a shuttlecock. These are of a light greyish-green colour, and contrast well with others having a deeper hue. The fertile fronds of this rise from the centre of the tree-like stem, and give the plant a very ornamental appearance. S. pennsylvanica greatly resembles the above, and no hardy Fernery should be without either one or the other. Both are readily increased from their underground stolons, which they send out freely wherever the soil is loose and open and favourable to their spreading. They should have a deep moist soil, or they become shabby rather early in the autumn from the attacks of thrips, to which they are always liable if grown in dry places. By the sides of running streams they have a very striking effect. Where sufficient moisture can be obtained Osmunda regalis should find a place. This does best where it can have its roots in running water, or where there is plenty of moisture in the soil. Where conditions are favourable the fronds attain a height of 5 ft. or 6 ft.; it is a truly regal Fern, and well deserving the name it bears. There is now a crested variety of this in cultivation that is very ornamental and quite worth adding to any Fernery that has sufficient moisture for its accommodation.

The Wild Garden should, if possible, be linked to the hardy Fernery, as Ferns and wild flowers are fit associates for each other. Hardy Palms, too, and a whole host of ornamental plants may be here introduced that would be quite out of character in any other portion of the ground, and therefore, where there is sufficient space, the hardy Fernery may be rendered if not the most ornamental at least the most interesting appendage to any grounds. Plants never look so beautiful as when they can have perfect freedom and grow unrestrained in their own natural way, without the pruning, training, and restriction necessary when cultivated in dressed portions of the garden. For the guidance of those engaged in the formation and planting of such places, it may be well to enumerate a few of the plants suitable for giving them a wild natural appearance, or such as associate well with the character which such portions of the ground should be made to assume.

Bamboos, in their different varieties, are particularly suitable, especially B. Metake and B. gracilis, as their gracefully-pendulous habit and light feathery foliage render them eminently adapted for positions of this kind. B. gracilis is a plant that can scarcely be misplaced, and should have a position assigned it somewhere or other in every garden. Polygonum Sieboldi is a very suitable plant for places of this kind, but, on account of its spreading nature, it requires keeping within due bounds; Berberis nepalensis, Aralia Sieboldi, and plants of that class are all suitable for associating with the above, and when well placed afford quite a tropical appearance of a permanent character; Phytolacca decandra is likewise suitable, but this should have a warm, dry, sunny aspect assigned it, or it does not fruit freely. Merging by degrees to the more wild part, the ornamental Brambles, wild Clematis, climbing Roses, Honeysuckles, and similar plants, may be used with good effect. Carex pendula is well adapted for associating with Ferns, where a wet place can be assigned it. In suitable positions it attains a large size, throwing up its sedge-like leaves and flowers to a great height. A large plant of it here, growing where it can reach the water, has a trunk or tuft 3 ft. in height, and, when in bloom, is an object of great interest and beauty.

In shady positions, common and other Primroses, Cowslips, Bluebells, Snowdrops, wild Anemones, Violets, and other early spring-blooming plants, natural to wild positions, should be planted with an unsparing hand; while, in the more open situations, Foxgloves, Solomon's Seal, Squills, Arums, Funkias, Aconites, Pulmonaria, Lithospermum prostratum, Omphalodes verna, Aubrietia, Daphne Cneorum, hardy Geraniums, Forget-me-nots, and many others, that will suggest themselves to the enthusiastic horticulturist, should be made use of. Gunnera scabra, with its huge leaves and singular-looking crowns, is just the plant for introducing in certain positions in the hardy Fernery. It will grow to perfection in a deep loose soil, and it thrives equally well both in shade and sunshine. Lily of the Valley must not be overlooked; this should be grown in masses, where it can be afforded a deep, rich, vegetable soil, and sufficient light and air to develop strong crowns.—J. Sheppard, *Woolverstone Park.*

Digging Herbaceous Borders.

My advice is not to dig—in the usual acceptation of the term. The only implement that should be recognised in a herbaceous border is a four-tined steel fork, and if one be obtainable that has seen some service all the better, as it will be in every way more suited for the work than a new one. I, of course, presume that during the frosty weather, as I before recommended, a dressing of well-decayed and tolerably concentrated manure had been applied. All, therefore, that is necessary in the way of digging will be to turn in the manure to a depth of 3 in., or just sufficient to get it covered with soil; by following out this suggestion, the fact will be practically endorsed that, as a rule, herbaceous plants enjoy a firm and undisturbed freedom in which to grow, and you will avoid the risk of the destruction that always follows the use of the spade. Now, just as the crowns are beginning to show signs of life, and bulbous plants are well out of the ground, is the time for this operation.—J. C. N.

Indoor Fruit Department.

Peaches.—Trees in houses started early will have completed their stoning process, and, where a heavy crop was left until this took place, thin out at once to the number required, leaving the finest fruit in the best positions evenly distributed over the tree. Do not lay the young wood in too thickly, but in such a manner as to admit all the light possible. Advance the night temperature to 60°, with a corresponding rise by day. Admit air on all favourable occasions, and retain a little during night; use the syringe night and morning, applying it forcibly upon the trees, so as to prevent red spider from lurking in out-of-the-way places. Pay attention to the borders as regards water, and, if the drainage be efficient, well supply them. If the trees be old and the borders long in use, assist them by a copious supply of manure-water. Trees in succession houses in flower should be assisted to set by the use of a camel's hair brush; go over the trees twice a week, choosing fine days about noon for the operation. Attend strictly, as previously recommended, to disbudding, pinching, and tying. Maintain a night temperature of 55° and a day temperature in proportion to the state of the weather. Start late houses, so as to have the fruit in before that on outside walls; water the border well, and syringe the trees and all available surfaces, which will be of more benefit to the trees than steam from the hot pipes.

Figs.—Those that were started early will now be approaching maturity, and where such is the case allow a somewhat freer and drier circulation of air. Water sparingly, but at the same time give sufficient to keep the trees in health; discontinue manure-water when the fruit approaches maturity, and give up the free use of the syringe. In many cases the second crop is better than the first, especially that from early trees, much depending upon the light to which they are subjected; good crops cannot be expected from shaded situations. In succession houses, where the fruit is swelling, let the night temperature remain at 60° with air, allowing the house to run up early in the morning. Assist the sun-heat, during cloudy weather, with fire-heat; give a little air when the thermometer reaches 65°, but avoid having on front and top air together at this early season; pinch or bruise at the fourth leaf, and prevent the foliage from becoming crowded by disbudding in time; allowing a heavy growth and extra cutting out are injurious, causing as it does a loss of fruit, and destroying the vitality of the tree. Well mulch the soil, and prevent it from becoming soddened; never allow the borders to become dry, otherwise when abundantly watered the fruit will split.—J. Hunter.

Out-of-Door Roses.

Those who did not prune their Roses in the autumn did well; but, if still unpruned, no time should now be lost in performing that operation and in manuring the beds. The mode of pruning will depend on what the plants are required for, inasmuch as every Rose-grower has a speciality of his own, *i.e.*, pruning for show blooms—for ornamental and uniform appearance—and for cutting purposes. Where Roses are grown for purposes of exhibition, the shape of the trees need not be studied, as in that case the best flowers and strongest buds might be sacrificed, but such plants require close pruning, and the shoots should be well thinned-out. When they break leave only the strongest and healthiest buds, and as soon as the bloom-buds show themselves they must all be thinned to a single bud to each shoot, which should be carefully staked and the plants watched every day in order to destroy any pests that may attack them, If, on the other hand, Roses be grown for ornament, the strong-growing kinds should be carefully selected from among the weaker sorts, and planted accordingly. If a row of standards be required for recesses or sides of a walk, it is advisable to plant Hybrid Perpetuals, and to get them all as near as possible of an even habit of growth, which will require about the same amount of pruning and training; strong-growing Noisette and Hybrid Bourbon varieties would always require heading back, and by so doing the display of flowers would be diminished. In beds the most vigorous kinds should be planted in the centre, and the delicate varieties round the outside, and they should be pruned so as to secure a good full bed. If for display, as well as for furnishing cut blooms, plant varieties that are useful for that purpose, such as Maréchal Niel, Gloire de Dijon, Victor Verdier, Jules Margottin, and others that are good in the bud state; never select any loose, thin-petaled Rose for such purposes. The strong varieties should be planted in places where they can have room to ramble, and they should never be pruned too closely, but tied down or trained to a wall. If standards, prune those of very strong growth back to four or five buds, leaving plenty of wood; if weakly-growing kinds, prune back close to the most prominent buds. Tea varieties should be thinned out and pruned out to the first wood-buds, cutting away all old flower-shoots. Noisettes do not require to be pruned back closely, but leave the shoots long, and tie with string or matting, so as not to allow them to get spoiled during strong winds. As soon as pruning is done, the beds that have not been manured should be dressed with some well-decayed manure, to which has been added fresh loam and a little crushed bones, carefully forking over the dressing some fresh soil, but taking care not to disturb the roots.—H. G.

Hardy Fruits.

Most people will be prepared to admit that the past winter and the spring (thus far) must be classed amongst the most inclement on record; but still the excessive moisture, in the form of snow and rain, does not appear to have had any prejudicial effect on fruit trees generally, at least not from present appearances. On the 20th and 21st ult. we registered here 8° and 10° of frost respectively, and Apricots being in flower, where not well protected, I fear will be destroyed—ours are all safe under a covering of the thickest make of scrim canvas. In late districts, where the blossoms have not unfolded, the buds will be safe, but protection should at once be applied; as also to Peaches and Nectarines and early blossoming Pears, which are quite as susceptible of injury from frost as the former. Now that all planting, pruning, and nailing are finished, and before disbudding, &c., is commenced, let all trees requiring it be well mulched or top-dressed with fresh soil or manure, whichever may be considered most beneficial for a particular tree. We have come to the conclusion that surface-mulching in fruit culture is quite indispensable, and I would recommend others to adopt the system in preference to constant digging immediately over the roots, which operation destroys any surface-feeders there may be, and drives the bulk of the roots deeply into the ground out of the reach of spade or fork, which would not be of much consequence if the mischief ended here, but being too deep in the soil neither sun nor air can act on them, both of which are essential to the welfare of the trees. Raspberries are especially benefited by a thick coating of semi-decayed manure as a surface-covering, and which should be put on now that the rains may wash the manurial properties to the roots, whilst the litter remains to ward off drought, of which they are most impatient. If Gooseberries and Currants were served in a similar manner the extra and finer produce would more than compensate for the labour involved. The weather has not as yet been suitable for grafting, but it may be presumed that such will now be favourable for the operation, which should therefore be completed with dispatch, the earliest grafting being, as a rule, the most successful. Just now birds—bullfinches and chaffinches particularly—are busy amongst the buds, Pears and Plums being their favourites; steps, therefore, should be taken to preserve them from their depredations, or the prospects of a good crop may be ruined. A moderate use of the gun is the best deterrent we have yet found.—W. Wildsmith, *Heckfield.*

HOW TO MISMANAGE A PUBLIC GARDEN.

The Gardens of the Royal Botanic Society in Regent's Park are so dear to Londoners from their beauty of disposition, and the many attractive exhibitions that have been—and, we trust, will be—held there, that anything which threatens to injure their condition as gardens deserves the attention of the horticultural public. Public gardens governed by a society are, from the nature of societies, not under the best possible direction. The very able and pleasant gentlemen who compose committees of botanical societies ought not, in justice to themselves, to be expected to be thoroughly acquainted with the details of garden management. Nor is the secretary of a society usually supposed to be properly fitted to manage the horticultural details of a public garden. Elsewhere public gardens are in the hands of curators, men skilled in garden management, who are responsible for the state of the gardens. Here the "superintendent" becomes a mere creature of the secretary, is located in a lodge at one of the back gates, and is treated in such a way as to preclude the possibility of any man of knowledge and self-respect retaining the situation for a season. It will hardly be thought credible that the late superintendent had not power to control his own foremen, but such is the fact; countenanced by the secretary, they have been of late accustomed not merely to disobey him, but to laugh at his pretensions to meddle with them. To deprive the captain of a ship (accustomed necessarily to almost absolute control) of all power to get orders executed by his subordinates would not be likely to secure the good management of a ship for many hours in the pleasantest of seas. The course pursued in the Royal Botanic Gardens, Regent's Park, is an equally harmful one. Lest there should be any doubt as to the facts, we publish the following extract from the set of rules for the guidance of the new superintendent, directing attention to the passages in italics:

> To have, *subject to the general orders of the secretary*, the management of the floral and fruit department of the society's exhibitions, and such correspondence with the judges and exhibitors as may be necessary.
>
> To have the control of all gardeners and workmen in the gardens, and the hiring and dismissal of gardeners and workmen *(except those on the staff)*, and the payment of wages in conformity with the regulations of the garden committee.
>
> To keep stock books of all plants, and an account of all plants, &c., received or given in exchange or otherwise. *No plants to be removed from any department or any exchange made without previous notice of the same being communicated to the secretary.*
>
> *To attend at the secretary's office every morning to report and receive instructions*, and at the same time to hand to the secretary written requisitions (duly signed) for money, goods, and materials, or for extra labour; and daily to hand to the secretary lists and descriptions, with the bills of parcels (if any) of all goods, &c., received and orders executed.
>
> *Generally, the garden superintendent is to consider himself under the orders of the secretary*, through whom all communications to the council are to be made.

In the second paragraph above given, the words "except those on the staff" mean that the person who ought to be the curator has no power over any but the casual labourers in the gardens. And what is the use of giving him power over these, if the foremen in the various departments may snap their fingers at him? Need it be wondered that with such a system as this the gardens, except for their original grace of design, long ago given them by Mr. Marnock, are perhaps the least noteworthy in the metropolis; that the handsome and roomy conservatory, so well suited for growing the finest specimens that could be desired, rarely contains a noticeable plant; or that the glass-houses are filled with the very poorest specimens of cultivation? It is most unfortunate that gardens so favourably situated and so well designed should be under influences calculated to paralyse the labours of the best of curators, if, under the above arrangement, such an one could be found to undertake the duties. The Council surely cannot have fully considered the meaning and effect of these directions, or they would not have sanctioned such a system; in any case, they may rest assured that the gardens will never be in a really creditable condition until they place them in the hands of an able curator directly responsible to the council for their condition.

THE LIBRARY.

A FEW SUGGESTIONS ON TREE PLANTING.*

This is a pamphlet mainly of interest to planters in New England and written for their benefit, but which is also a valuable contribution to forest literature. It gives many striking instances of the evils occurring from the destruction of forests, and in the latter part embodies a good deal of original and valuable information as to the kinds of trees—European and American—which thrive best on the stony hill-sides and waste lands of New England. The following paragraphs illustrate how the author treats this part of his subject:—

The White Cedar.—The White Cedar (Cupressus thyoides), although we are here on its northern limit, where it only attains a moderate size, should be planted on account of the value of its wood for fencing and other rural purposes, boat-building, shingle-making, &c., but more especially on account of its natural place of growth, which is always in deep, cold swamps, often near the sea, and overflowed by high tides, a situation in which no other tree of an equal commercial value could possibly thrive.

The White Ash.—In consideration of its market value at all ages, the rapidity of its growth, and the length of time it continues to throw up suckers, the White Ash (Fraxinus americana) is the most valuable of all our native trees for planting in this State. Already there is a rapidly increasing export trade of Ash lumber to Europe, Australia, and the Pacific coast, from Boston and New York, and the possibilities of this business can only be limited by the supply. The American is generally acknowledged to be superior to the European Ash in the qualities for which it is specially valued — toughness and elasticity—and in which no other wood can equal it. Australia possesses no other tree which is at all its equal for carriage-building, while west of the Rocky Mountains there is but a single one which can supply its place—an Ash (Fraxinus oregana, Nutt.) which, developing into a large and valuable timber tree in Oregon, is less frequent and less valuable south of the California line. Of the economic value of several Ashes which grow on the Eastern Asiatic sea-board, nothing is as yet known. It seems, then, that the New England States could command the markets of the world for one of the most useful and valuable of all woods, had they but a sufficient supply to offer. According to Mr. Thomas Laslett, timber inspector to the British Admiralty, the specific gravity of American Ash is 480, while that of the European is 736. The former is, therefore, on account of its greater lightness, far more valuable for the handles of shovels, spades, hoes, rakes, and other hand implements. According to the United States census of 1870, the number of spades, shovels, rakes, hoes, and hay-forks made in that year was 8,347,478, and as our exportation of such implements is rapidly increasing, although still in its infancy, it is evident that the value of Ash will be greatly enhanced at no distant day. It is also used in making ships' blocks, in turnery, and for making the oars of boats. In speaking of the White Ash, Laslett says: "It stands well after seasoning, and hence we get from this tree the best material for oars for boats that can be produced. They are much and eagerly sought after by foreign governments as well as our own, and also by the great private steamship companies and the mercantile marine of this country; consequently there is often a very keen competition for the possession of them." The manufactory of oars (surely a sea-board industry), in pursuit of material, moved from Massachusetts first to Maine, and then to Ohio and other Western States. Ash is coming into extensive use for expensive furniture and for the interior finish of houses, while an immense number of the young saplings are annually consumed in the coopers' trade. Its value for firewood, according to Bull, is 77, the standard (Hickory) being 100, while only four other American woods are its superior in heat-giving qualities. In view of its many uses for purposes for which no other wood can supply its place, it is not astonishing that the value of Ash lumber has largely increased of late years. The present price in the Boston market of the best New England Ash is 85 dollars per 1000 feet, or about 15 dollars higher than that grown in the West. To develop its best qualities, the White Ash should be planted in a cool, deep, moist, but well-drained soil, where it will make a rapid growth. That the plantation may be profitable as early as possible, the young trees should be inserted in rows 3 ft. apart, the plants being 2 ft. apart in the rows. This would give 7250 plants to the acre, which should be gradually thinned until 108 trees are left standing, 20 ft. apart each way. The first thinning, which might be made at the end of ten years, would give 4000 hoop-poles, which at present price would be worth 400 dollars. The remaining thinnings, made at different periods up to twenty-five or thirty years, would produce some 3000 trees more, worth at least three times as much as the first thinnings. Such cuttings would pay all expenses of planting, the care of the plantation, the interest on the capital invested, and would leave the land covered with trees capable of being turned into money at a moment's notice, or whose value would increase for 100 years—making no mean inheritance for the descendants of a Massachusetts farmer. The planting of the White Ash as a shade and roadside tree is especially recommended, and for that purpose it ranks, among our native trees, next to the Sugar Maple.

The late M. Charles Barillet.

Change.— Weigelas, Deutzias, Forsythias, Philadelphus, and Viburnums—we need not particularise further—are as common in gardens as Violets in the woods and Corn Flowers in the fields. They are all fine—many of them faultless it may be. But for the same reason that we do not make beds of the Corn Flower in our gardens ought we to avoid in future these shrubs which, greeting us from every garden, have in a measure lost their charms. There is no more reason why our gardens should be furnished alike, than that our houses should be built and painted alike, furnished alike—or that people should dress alike. Indeed, as gardens are mainly objects of beauty, while houses, furniture and dress are mainly matters of necessity—there is stronger reason why gardens should not be copies of each other. We ("Moore's Rural") should like our readers to "shop" a little for shrubs, and give a moiety of that consideration to variety in their gardens that they bestow upon dress.

THE LATE M. BARILLET.

The most active and popular person in charge of the public gardens of Paris previous to the great war was Barillet. He projected the majority of the most beautiful and extensive gardens in that city. Recently numerous French horticulturists subscribed and erected a memorial tomb and bust in Père la Chaise to his memory, and few men better deserved such honours. He had rare taste and very extensive experience in gardening, and was for a long time superintendent of the then great nursery of the City of Paris as well as of most of its gardens. We reproduce an excellent likeness of him from the "Revue Horticole." An obituary notice of M. Barillet appeared in our columns a short time ago.

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* "A Few Suggestions on Tree Planting." By C. S. Sargent, Director of the Botanic Garden and Arboretum at Harvard University. Boston: Wright & Potter.

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY, REGENT'S PARK,

March 29th.

This, the first show of the season, was, on the whole, a very interesting one, Hyacinths and Cyclamens more especially being well represented, and a very good strain of Cinerarias came from Mr. James. Messrs. Veitch & Sons and Mr. B. S. Williams showed good collections of new and rare stove and greenhouse plants in the miscellaneous classes. Mr. Ward furnished an effective group of stove and greenhouse plants, to which the first prize was awarded in the amateurs' class. Among these we remarked a splendid variety of the scarlet-spathed Anthurium, named Wardii, Odontoglossum Pescatorei, bearing three very fine-branched spikes, a well-bloomed example of Lycaste Skinneri, Dendrobium nobile, Acacia longifolia, Eriostemon intermedium, and Cytissus racemosus elegans. Mr. Ward also staged a well-grown group of Azaleas, the principal attraction being a well-flowered example of A. Borsig, a fine double-white variety. Mr. J. Douglas had six large and well-flowered specimens of Deutzia gracilis, nearly a yard high, perfect masses of bloom. These were old plants, trained closely in and forced every season for decorative purposes. The best examples of Lily of the Valley came from Messrs. J. Carter & Co., of High Holborn.

Botanical Certificates were awarded to the following new or rare plants:—

Adiantum digitatum (Veitch).—A distinct and handsome stove Fern, having large bright green tripinnate fronds, each when fully developed nearly a yard in length, the pinnæ being semi-circular, and irregularly slit or lobed. The whole aspect of the plant is very graceful, the pinnæ being borne on a slender wire-like rachis.

A. Luddemannianum (Veitch).—This is simply a curiously-crested form of our British Maiden-hair Fern (A. Capillus Veneris), from which, however, it differs considerably, the pinnæ being clustered towards the end of the erect fronds, so as to present a crested appearance.

Abutilon Darwinii tesselatum (Veitch).—An erect-growing very ornamental plant, especially in a young state; it has cordate leaves boldly trilobed at their apices of a soft green colour, blotched conspicuously with golden yellow. The flowers, which are borne in axillary fascicles, are bell-shaped, the colour being a bright red, inclining to vermilion.

Brahea filamentosa (Veitch).—One of the most distinct of all stove Palms; it has large fan-shaped foliage of a soft glaucous colour, the marginal divisions of the fan-like leafy portion being furnished with long whitish filaments; it is a kind which well deserves attention.

Grevillea Priesii (Veitch).—A shrubby plant of dwarf habit, its frizzly-cut foliage closely resembling some of the grey Lichens, or the divided glaucous leaves of the common Southernwood. Little plants of it, a foot in height, are very pretty, the extremity of each branch being terminated by a dense cluster of bright rosy flowers, something like those of G. rosmarinifolia. It is an Australian shrub, and well deserves a place among greenhouse plants.

Odontoglossum Chestertoni (Veitch).—This is one of the most distinct of the O. Alexandræ group; it has creamy-yellow flowers conspicuously blotched with purplish brown, the lip being suffused with golden yellow. Being a very distinct and ornate plant, it well deserves culture wherever variety is desired.

Rhododendron Princess of Wales (Veitch).—This is a hybrid between R. Princess Royal and R. Lobbii, and bears beautiful trusses of vivid rosy flowers, the tube shading into white. It is one of the best of a very attractive group.

Floral Certificates were given to the following:—

Hyacinth Princess Louise (Cutbush).—This is a double-flowered variety, the colour of which is a rich salmon, the bells being of good substance, and arranged densely on the spike. It is very distinct in colour, and as such deserves culture.

Tea Rose Madame Francois Janin (Bennett).—This is a distinct variety of slender habit, the foliage well formed, and of wax-like consistence. In the bnd state it is very beautiful, the colour being a bright orange, shaded with salmon. It seems well adapted for bouquets and other decorative purposes.

H. P. Rose Comtessa de Sereuyi (Bennett).—This is a fine flower of good shape. It has flushed satin-like revolute petals, suffused with rosy-lilac in the centre. In colour it somewhat resembles Captain Christy, but appears distinct, and, considering the season, was staged in admirable condition.

H. P. Rose Duchess de Vallambrosa (G. Paul & Son).—A robust variety, somewhat similar in colour to the last-named, but otherwise distinct; it has stout revolute petals, delicately shaded with rosy lilac. It was shown in a pot, and had, of course, been forced, but it evidently has much to recommend itself, especially for exhibition purposes.

Hyacinths and Tulips.—Hyacinths were staged, on the whole, in excellent condition, Messrs. Barr & Sugden and Messrs. Cutbush & Sons being the principal exhibitors of them in the Nurserymen's Class; and Mr. J. Douglas, Mr. Weir, and Mr. Moorman represented the Amateur growers. Some of the spikes were very fine, and among the best of them were the following:—Mont Blanc, a fine single white; De Candolle, single lilac; Blondin, single blue; La Grandesse, single white; Garibaldi, single crimson; Charles Dickens, single blue; Ida, single yellow; Koh-i-noor, bright rose; Howard, Lord Macaulay, and Ristori, rosy varieties. Czar Peter is one of the best of the large-flowered light blues, and Marie is a good purple; King of the Blues is an excellent dark variety, as also is Havelock; Blondin and Lord Derby were also staged in good condition; Mimosa is a dense purplish blue, and Cosmos is a tall and lively pink variety of good form; Ida is certainly the best yellow, a kind which enriched the appearance of several groups, being very lovely and delicate, when contrasted with the vivid purple, blue, and rosy varieties. Tulips were staged in excellent condition, especially by Mr. J. Douglas, who had a well-grown group, in which white Pottebakker, Vermilion Brilliant, Keizer Kroon, and the deep rosy Proserpine shone conspicuously; Fabiola is a distinct white variety, flaked with carmine; and Van der Neer is a good purple.

Miscellaneous Plants.—A small but very effective group of Orchids, Ferns, and other decorative plants came from Messrs. Veitch & Sons, of Chelsea, and among these we noted the new golden-foliaged form of Abutilon Darwinii, several Amaryllids, Rhododendron Princess of Wales, a hybrid between R. Princess Royal and R. Lobbii, a very distinct kind, and one which bears its flowers in large trusses, the limb being of a vivid rose colour, and the tube white. R. Excelsior is another distinct rosy-flowered hybrid between R. Princess Helena and R. Lobbii. The new Odontoglossum Chestertoni was shown in this group, and the new Adiantum digitatum, which has long, flexuous, tripinnate fronds, the pinnæ being of a bright green colour, nearly semi-circular, and irregularly-lobed. This promises to be one of the most distinct and beautiful of all new Maiden-hair Ferns. A new fan-leaved Palm, Brahea filamentosa, also shown in this group, is a very distinct kind, the margin of the bright green fan-like lobes being filamentous, like the leaves of Yucca filamentosa. Mr. B. S. Williams, of Holloway, sent a miscellaneous group of Orchids, Palms, Ferns, and other decorative plants, and also a very attractive group of new seedling Amaryllids, the colour being in many cases very vivid and distinct. Among the best of the latter we noticed A. virginalis, a white-petalled form with a delicate green centre; The Czar, velvety-crimson with dark veins; Oriflame, vivid scarlet; and Princess of Wales, vermilion. Several new seedling Gloxinias were shown by Mr. B. S. Williams, one named Adelina Patti, being white with a crimson tube; and another, Empress of India, white with a purple tube, both being distinct. A good group of Orchids in flower was shown by Mr. F. A. Philbrick, Avenue Road, St. John's Wood; among these we observed the new Phalænopsis Mannii, a kind with yellow flowers blotched with brown, and also the new P. Casta, recently imported by Mr. Low. This is supposed to be intermediate between P. Schilleriana and P. amabilis, and closely resembles the first-named kind in having marbled foliage and rosy flowers; P. grandiflora was also represented by well-bloomed plants, and several Odontoglots, Lycastes, and Dendrobes, completed the group. A very attractive collection of cut Camellia blooms came from Messrs. W. Paul & Son, of Waltham Cross; among these we noted fine blooms of C. imbricata, one of the best red varieties; Chandleri, very vivid scarlet; the old Double White; fimbriata, fringed white; Valtevaredo, rose; Lavinia Maggi, striped; and many others. Messrs. Cutbush also sent a well-arranged stand of Camellia blooms; and some fine flowers were likewise furnished by Mr. C. Attrill, gardener to C. J. Freeke, Esq., Bank Grove, Kingston. Messrs. W. Paul & Son contributed an extensive collection of gold and silver, tricolor and bronze Zonal Pelargoniums, among which we noted Mrs. Turner, a dwarf and effective golden tricolor of good habit; likewise Midas, one of the best of the bronze Zonal section and Lady Dorothy Neville, a very bright silver-edged tricolor, the rosy zone being very vivid. Messrs. George Paul & Son, of Cheshunt, showed a well-grown group of seventeen pot Roses, among which the following varieties struck us as being worthy of notice, viz.:—H. P. Duchess de Vallambrosa, a fine satiny-petalled blush, something in the way of Captain Christy, but quite distinct, and likely to be a good addition to exhibition Roses; Cheshunt Hybrid (Tea), with ten or twelve lovely rich magenta-tinted flowers; Shirley Hibberd, a neat and effective salmon Tea-scented variety; Marie Van Houtte, a lemon-tinted Tea, of good form, with fine bronze-like foliage, and Jean Ducher, a very distinct Tea-scented variety, the creamy flowers of which are suffused and stained with salmon-rose. Mr. H. Bennett, of Stapleford, sent a large stand entirely filled with lovely little buds of Madame Francois Janin, one of the neatest and most distinct of all the Tea-scented Roses; it has waxy foliage and golden buds, tinged with salmon, and is one of the most distinct of all Tea Roses for button-holes or bouquets. The same exhibitor also furnished a new rosy-lilac H. P. Rose, named Comtessa de Sereuyi, with reflexed satiny petals, and one which appears to be of robust habit, the foliage being very fine and of good substance. Messrs. G. Paul & Son showed four stands of cut Roses in excellent condition. Among the different varieties we remarked Marechal Niel, Celine Forestier; Clothilde, a rosy Tea kind, with delicate shell-like petals; alba rosea, paper white; Dr. Andry, crimson; La France, satiny Rose; Perle de Lyon, yellow, with salmon centre; Madame Victor Verdier, and others equally good. Messrs. Carter had a fine bank of Hyacinths, Tulips, and other forced spring flowers, including six fine specimens of the rosy Chinese Dielytra, in admirable condition. Mr. James, of Isleworth, sent a fine collection of dwarf Cinerarias, among which were several fine varieties, and a deep carmine kind of good form, named Acme, was certificated, as was also a fine blue form named Dr. Masters, and one or two others.

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> "*This it an art*
> *Which does mend nature: change it rather: but*
> *The Art tiself is Nature.*"—Shakespeare.

TRANSPLANTING DECIDUOUS TREES IN FULL LEAF.

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

FINDING that my name has been occasionally brought forward in connection with a subject which has been somewhat erroneously called "Transplanting Deciduous Trees in Summer," I purpose giving a few notes of my experience in removing certain deciduous trees at seasons not generally considered orthodox, although not exactly during the summer months. About the year 1840 I had occasion to clear a piece of ground for the erection of a span-roofed greenhouse. The proposed site was covered with evergreen shrubs and a few deciduous trees, the largest being a Sorbus or Service tree, about 25 ft. in height, with a stem 2 ft. 3 in. in circumference. In order to clothe as speedily as possible a piece of unoccupied ground lying to the east side of the proposed house, I resolved to remove the best of the evergreen shrubs and the Service tree. These operations were done during the month of July, at a time when the leaves were all thoroughly matured. I had no hesitation about the evergreen shrubs, none of them being of large size; but I was somewhat doubtful about the Service tree, knowing it to be one of those kinds considered difficult to remove with safety, even at any season, particularly when large. The weather at the time was dry, and the distance to be taken was only 30 ft. About the end of June I had a narrow trench made, about 2 ft. from the stem, and 1 ft. deep, all round; a thorough soaking of water was then given two or three times during as many days. After standing for a week the opening up was commenced, adopting the same plan as is always practised here, and which was described in THE GARDEN for August 1873, viz., the forming of an elongated circular ball, about 9 ft. in circumference and 3 ft. in depth, cutting off any strong roots which protruded beyond the surface of the ball. The mass was then covered with canvas, and afterwards surrounded with thin barrel staves, the whole being thoroughly secured or racked round with a stout rope. The undermining was then commenced, and strong lifting ropes and bottom boards put below. By means of two strong high wooden tressels and iron rollers, worked in movable cradles placed at each end of the tressels, the lifting ropes were brought up over the rollers, and worked by means of handspokes. When raised above the level of the hole (two strong planks, 3 in. wide and 10 in. broad, being placed across it), a low-wheeled machine, 6 in. in height, was run on them, on which the tree was lowered, and after being thoroughly fixed to the machine with the lifting ropes, the tree was drawn on planks to its new situation immediately over the new hole. The planks tressels, and rollers were again adjusted, the plant again suspended, the machine and planks withdrawn, and the tree was lowered into the pit prepared for it. After the removal of all the trappings, some good soil was put round the ball, and the roots spread out, and, after being finally filled up, it was thoroughly watered, the stem, for 8 ft. in height, being covered with Sphagnum Moss, and the surface of the ground mulched with short-cut grass. The top and stem were frequently syringed during the evenings, particularly when dry weather prevailed. During the whole operation not a leaf was observed to droop. About the middle of August a yellow tinge began to show itself over the foliage, which gradually increased till the second week of September, when the leaves began to fall off, thus showing a healthy sign; by the end of the month nearly every leaf was down. During the following spring new leaves were developed as if nothing had happened. No flowers or fruit, however, were produced, but afterwards this tree continued to flower and fruit for many years, when it had to be cut down to make way for an additional house' During the year 1852 a new class-room was about to be erected' and as the building had to be commenced during the month of August, the ground had to be cleared of trees, and the foundation removed before that time. The only tree on the ground that I was anxious to save was a fine flat-headed specimen of the dotted fruited Thorn (Cratægus punctata), with a stem 2 ft. 6 in. in circumference. This tree was prepared, lifted, and removed, with its large ball of adherent earth, in the month of July, in the same manner as just described for the Sorbus, and is now a fine thriving tree. A large specimen of the Honey Locust tree (Gleditschia triacanthos), which stood in the way of a walk alteration, was prepared and removed during the month of August, 1862, while in full leaf, and is now a fine healthy specimen. Oaks, particularly the variety known as Quercus pannonica, or conferta as it is now called, has been frequently lifted during the months of July and August, and generally done with the ordinary two-wheeled McNab Transplanting Machine, as described and figured in this journal for August, 1873. In all cases their removal has been attended with perfect success, water in every instance being copiously supplied both before and after the operation. I need scarcely say that many Coniferous trees, such as specimens of the genus Pinus, Picea, Abies, Taxus, Cedrus, and others, as well as many large ordinary shrubs, can often be removed with greater chances of success, if done during the month of May when the young growths have fairly started, than if planted when the shoots are entirely dormant. In all such cases, however, it is absolutely necessary that a large, adherent ball of earth be removed with them, and water afterwards freely given. It is by no means usual to remove large evergreen shrubs during the month of May, still, if wanted for any emergency, it can be done, if proper appliances be used during the operation, and subsequent care be given. The first large evergreen shrub I attempted to remove at an unusual season was a Portugal Laurel, 8 ft. in height and 14 ft. in circumference of branches; the young growths had fairly started all over it, each being fully 2 in. in length. The ball lifted was 3 ft. in diameter. It was removed May, 1848, to hide a particular object. After its removal was effected,, surface mulching and frequent syringing were resorted to till the young growths were matured. Syringing was also carried on at intervals during the time the lifting and removal were in progress. By this precaution the young growths had never time to droop, and they kept expanding their leaves as if nothing had happened. This shrub is now a fine, healthy, hemispherical specimen. Many large evergreen shrubs, moved with the greatest care during winter and the early spring months, often remain for a season in a somewhat dormant condition. The check sustained by the operation of lifting often prevents them putting forth young growths the following summer. During the spring, twelve months after being removed, they will push out healthy young shoots. This seeming suspension of vitality frequently occurs with deciduous, ornamental, and forest trees when lifted without balls of earth, as they, too, often remain for a season leafless, particularly if dry weather happen to prevail, but push freely into leaf during the following spring. If, however, they experience a moist autumn, many will be found to push partially into leaf late in the year. This is particularly noticeable with medium-sized Laburnum trees planted during winter and spring, no leaves being produced during the following summer; towards autumn, however, they frequently put forth a quantity of flowers, all the spikes being of small size; the following spring leaves are freely produced, but no flowers are formed till the following year. Some trees take several years to recover properly from the check received during transplantation. With many kinds of tall forest and ornamental trees—say from 10 to 18 ft. in height—kinds which have not been regularly turned over or transplanted in the nursery ground, it is better to prune their tops when they are removed in proportion to the roots, which must of necessity get cut. Such topped trees are more likely to succeed than when planted with all their tops entire. The branches of many large unpruned transplanted trees frequently die, and after-pruning is necessary to free them from dead wood. If judiciously pruned at the time of planting, the trees will make much better specimens in a given time, and save all the wood originally left. These remarks are particularly applicable to trees lifted without a ball of earth, and to those taken out of plantation thickets, where they get drawn up, and where the roots get interlaced with the neighbouring specimens.

I have not tried the effect of July and August transplanting on deciduous trees, where all the soil had been previously removed from their roots. In such cases I should say that if freely divested of many of their branches and the shortening of others, and all injured roots properly swathed or cut, success may attend the operation; but in no case need success be expected if all the leafy branches are left on. When large deciduous trees, say with stems from 2 to 3 ft. in circumference, are to be lifted, and one year is given for preparation, viz., the opening up of a trench all round during the previous year, varying according to the size of the tree, the roots properly cut, and the trench filled up again; when the season for lifting takes place, all the branches should be partially removed and shortened, as shown in the annexed representation (fig. 1), such mutilated stems can be transplanted with impunity. No doubt such specimens are disfigured for a time; ultimately, however, they push out and make good trees, which is preferable to the system of preparing the roots one year, and removing them without any of the branches being lopped. The soil in all these cases is generally taken from the roots, so as to enable the stems to be lifted, and laid over on a janker, or some other similar contrivance, for the purpose of removal. Several large specimens known to me treated in the branch-pruned way are now fine, healthy, luxuriant-growing trees, while many large unpruned specimens are either dead or partially decayed. This same operation of topping, branching, and root-cutting also equally applies to hedges, both evergreen and deciduous; while being transplanted they are, no doubt, disfigured for a time, but ultimately they break out all over and gradually thicken up, which would rarely be the case if lifted and planted without any cutting whatever. After cutting, the stems can be regularly arranged, which is difficult to do satisfactorily when transplanted without these preliminary operations. Young hedges may be successfully treated without the cutting alluded to, while with medium and old hedges such an operation is absolutely necessary. The success attending severe pruning is very marked in the case of recently-cut stems placed in the ground for the purpose of training Roses on or other flowering climbers. I have seen stems of Oak, Elm, and Ash, about 15 in. in circumference, dug up even during the months of May and June, all the roots cut off below the surface of the soil, as well as their tops (fig. 2), and all the side branches, leaving the stems about 10 or 12 ft. in height. No matter in what season this work is done roots will be produced soon after the stems are in the ground; buds will be produced which afterwards become branches. Pillars or supports of this kind are less liable to rot or get blown down than dead wood pillars would be; of course young branches, when formed, must be regularly pruned off or shortened to prevent them interfering with the climbing plants planted against them to receive support.

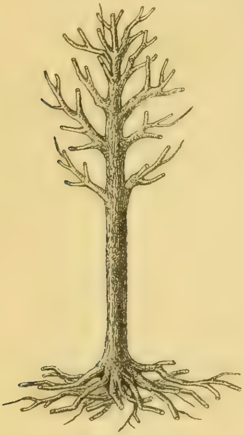


Fig 1.

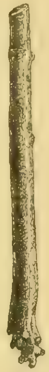


Fig 2.

Since writing the foregoing I have had some conversation on the subject with my friend Mr. P. S. Robertson, who has had great experience in planting, and in all landscape gardening operations. In one of those villa residences in the neighbourhood of Edinburgh, the laying out of which was entrusted to him, a site was selected to build a new mansion; on the proposed ground stood a large Pear tree, about forty years old, with a stem 3 ft. in circumference, and which was a favourite with the family on account of the produce annually supplied by it. As the work was commenced at Midsummer, this Pear tree had to be lifted and removed to another part of the garden. While the operation was going on every leaf was cut off, and the tree carefully planted. During the following year leaves were put forth, but no flowers or fruit were produced, now this tree is in full vigour, and annually produces good crops. As this favourable result is entirely attributed to the cutting off of the leaves, it may serve as a hint to parties wishing, or rather obliged, to remove trees at seasons not generally practised, and may apply equally well to forest and ornamental, as well as to fruit trees. This sudden cutting off of the leaves prevents the sap being carried off by them, and thus reserves it for the nourishment of the stem, and for perfecting the dormant buds. Cutting off the leaves of certain plants is by no means new; but I never saw the practice applied to large fruit trees as alluded to by Mr. Robertson. Many years ago, while in charge of the Caledonian Horticultural Society at Edinburgh, we frequently had occasion to send portable deciduous trees and shrubs, also rare plants, fruit trees, and Gooseberry bushes to New Zealand and other distant foreign countries. In all cases I removed their leaves before packing, and generally found that such, after a long voyage, arrived in better condition for growing than those packed with all their leaves on. Now that steam navigation is employed, and these long voyages are in consequence shortened, such plants can be sent with safety after their leaves are naturally off in autumn. I may state, that in all cases the roots were placed at each end of the packing-box, firmly secured by layers of Sphagnum Moss, while their tops were free in the middle.

FANCY PRIMROSES.

Though much has recently been written relating to the properties, culture, and improvement of Primula acaulis and elatior, much more remains to be added to our present limited knowledge of the capabilities of these beautiful and tractable plants before the subject will be nearly exhausted; for, at the present time, there is probably not a single variety of Primrose in cultivation that is not susceptible of great improvement, or one that meets the requirements of a perfect florist's flower, which requirements are, with reasonable care, quite attainable. At present I am not sufficiently cognizant of the results of my second year's experiments to enable me to refer to them with any amount of certainty; but, at some future period, I trust to have the opportunity of showing how very easily good seedlings may be raised. I propose, therefore, for the present, to confine my remarks to the power of pollen, as illustrated by my first year's experience. Late in the spring of 1874, I was so fortunate as to obtain from Mrs. Bower, of Hackness, Primula acaulis Vesuvius, which grand variety was raised by that lady. Perceiving that it was capable of introducing a new strain, it was decided to make the most of it, but, unfortunately, the season was too far advanced to permit me to procure suitable varieties to seed it on to; therefore, it was necessary to rest contented with such plants as could be obtained. These comprised one yellow-marbled Polyanthus, one silver-chain Polyanthus, and one scarlet Polyanthus, three dark varieties, all of which were thrum-eyed and of fair form and substance; they were carefully potted and placed in a cool greenhouse close to the glass. After removing the fully-expanded flowers, those that were about half-matured were cut open to the bottom of the calyx to extract the immature pollen, and at the proper time that from Vesuvius was applied. I am aware that Lecoq and other leading authorities are of opinion that seedlings, with many exceptions, resemble the seed-bearing parent both in colour of flower and habit of plant rather than those of the male; but my own experience is directly at variance with this opinion, and for a long series of years it has been my invariable practice to trust exclusively to pollen for any property required, and I may add that where suitable plants were obtainable I cannot remember a single instance of failure in obtaining any desired feature, at the same time it is only right to admit that I have possibly travelled on the longest road to attain my object. It is impossible to give a very correct idea of the markings and colours of the 350 seedlings that I have raised; many were thrown out so soon as they flowered, and more still were given away, while those that were retained on trial have been so much injured by the larvæ of the otiorhynchus sulcatus that but few of them are at their best. I think I may safely say that there were not ten true Polyanthuses, or the same number of true Primroses, while the remainder were intermediate. Regarding colour, a few were straw or primrose, about a dozen were pure white, a small proportion were dark shades of colour, and a large number were more or less like Vesuvius. At present, it is difficult to decide on the merits of these seedlings, some of them are of good form, size, and substance, and possibly a few may be worth keeping for a season or two, though I trust that the best of them will shortly have to give place to better varieties, for at present they can only be considered as the first step towards obtaining fancy Primroses. A. Clapham.

Ramsdale Bank, Scarborough.

GRAPE HYACINTHS.

Most of the Grape Hyacinths are now in full flower, and many of them are very desirable in the mixed border. Muscari botryoides is a well-known and deservedly favourite bulb, and has a distinctly dressy appearance from its little white teeth on its blue globose clusters. It grows about 9 in. in height, and is, therefore, very suitable for the front line of the border. The varieties M. b. pallidum and M. b. album are very distinct, and are even more beautiful; the former has pale sky-blue clusters, and is at the present time one of the prettiest ornaments blooming in the garden. M. Heldreichii resembles M. botryoides, but is finer, both by reason of its longer spike of flowers and from its larger size; it is now in full bloom. The best-known, perhaps, of all the species is the old M. racemosum, with its dark purple clusters and its strong smell of Plums. Its leaves are long and weak, almost lying prostrate on the ground, whereas in M. botryoides and its varieties they stand boldly erect. We may still find M. racemosum in old cottage gardens, as it is seen in some few places, growing apparently wild, but no doubt has only escaped from some adjacent garden. It will hold its own anywhere, and, if permitted, wander all over the mixed border, growing like a weed and in any soil. This plant has a near relative in M. commutatum, with blue flowers darkening by degrees into purple (whence its name). Quite distinct from any of the foregoing is the Feather Hyacinth (M. comosum monstrosum), growing a foot or more in height; its flowers, of a beautiful mauve colour, bear a close resemblance to purple feathers, being cut into clusters of wavy filaments. Though, comparatively speaking, this species is now seldom seen, it is in every way qualified for a place in a collection of hardy flowers. M. moschatum should not be omitted from the same collection, though it is not likely to be grown for its beauty. It has flowers in clusters, of a dirty yellow hue and very inconspicuous, but amply atones for its shortcomings in this respect by its delicious fragrance. Another sweet-smelling Muscari is M. luteum, the flowers of which fade by degrees from a dull purplish hue to one of a clear yellow. M. armeniacum I have not yet tried, but from all accounts, it must be one of the best. There are several other varieties offered in catalogues, but I believe the best are the ones I have mentioned above. Though coming from the south of Europe they are all perfectly hardy; and will grow in any position in ordinary garden soil, which should induce everyone to cultivate the different species and varieties of Muscari.

Oxon.

The Mounds in Hyde Park.—Mr. Pease called attention in the House of Commons, the other evening, to the mounds of earth now being erected on the south bank of the Serpentine; he moved that the mounds at present being erected there are unsightly, and will, when planted, be detrimental to the picturesque character of Hyde Park, and ought to be removed. The debate was adjourned for another day. There is no doubt that from the point of view of landscape effect the making of these mounds is a great mistake. The view is interrupted, and will be wholly shut out, if the trees be allowed to grow; the pleasant slope of turf that spread from the "Row" to the water's edge is destroyed.

Forcing Lilacs.—Will you kindly inform me whether there is any difficulty in growing and forcing Persian Lilacs, as my gardener never has more than three or four wretched blooms on a plant. There cannot be any art in the culture I think, or you could not buy them for the small sum of half a franc in the flower markets in Paris.—P. J. N. [A source of failure with Lilacs is caused by annually taking up young unprepared plants for forcing. They must be established and furnished with plenty of flower buds, and then the rest is easy. There is so much "art" in the forcing of Lilacs that some people devote their whole lives to it and perhaps one or two other subjects. It is inconsiderate to expect a private gardener, who is concerned about many things, to rival a market grower, who devotes his whole time, and perhaps all needful means, to the culture of a single plant.]

Increasing the size of Cut-back Pot Vines.—Canes in pots, grown from the previous year's roots, generally make a foot or two of strong wood at the bottom; but, as they ascend, they become smaller, and often at 4 ft. and 5 ft. from the pot are no thicker than a Wheat straw. This is much against Vines fruiting well, but they may be had as thick at the top as at the bottom, by stopping the leading shoot whenever it shows the least indication of getting smaller. Vines treated in this way are a week or two longer in attaining their full length; but this is no detriment, considering what is gained through the delay. Vines raised from eyes have not generally the same fault.—J. Muir.

The Dwarf Aubinel Peach.—The "Revue Horticole" of the present month gives an account of the Dwarf Aubinel Peach, which merits the attention of all Peach-growers. This Dwarf Peach is a bushy, round-headed, vigorous tree, with upright branches, which are thick, short, and numerous. The flowers are large, and of a bright rose-colour. The fruit is of a pale yellow, clouded with red, and is of exquisite flavour. It ripens in Paris about the end of September, in a sunny situation. When the fruit has nearly attained its natural size, it ought to be well cleared from the leaves about it, the abundance of foliage being very great. It is of such small dimensions, that it may be grown in pots, and even placed on the dessert-table, or it may be cultivated in borders like Gooseberry bushes. This valuable addition to the fruit garden is due to M. Aubinel, nurseryman, Grenade, Haute-Garonne. It may be mentioned that the seedlings resemble the parent plant in every detail.

"Sweets."—The public—especially the poorer classes—are cautioned in "Chamber's Journal" against buying jams labeled "Family Preserve," "Royal Jam," "Fruit Preserve," or "Household Jam," which are made up chiefly of rotten, maggoty, and unsaleable Figs, together with bad Plums and the sweepings of warehouses. Greengage jam is frequently coloured with copper, and marmalade is often adulterated with Apples and Turnips. Copper enters largely into much of our most tempting preserves, owing to the copper vessels in which they are prepared. The highly coloured green bottled fruits and tinned vegetables are nearly all contaminated with copper to a greater or lesser extent: it is purposely introduced not as necessary to the preservation of the fruit and vegetables, but to retain the bright green colour considered so essential to the look of the articles. The English purveyor, like the Chinese, finds that the best looking things, coloured at the expense of a little poison, demand the readiest attention and the quickest sale.

How to get rid of Tree-stumps.—Gen. Colquitt, of Georgia, in a recent address, said:—To remove stumps from a field, all that is necessary is to have one or more sheet-iron chimneys, some 4 or 5 ft. high. Set fire to the stump and place the chimney over it, so as to give the requisite draught at the bottom. It will draw like a stove. The stump will soon be consumed. With several such chimneys, of different sizes, the removal of stumps may be accomplished at merely nominal labour and expense.

—— In the autumn, bore a hole 1 to 2 in. in diameter, according to the girth of the stump, vertically in the centre of the latter, and about 18 in. deep. Put into it from 1 to 2 oz. of saltpetre; fill the hole with water, and plug up close. In the ensuing spring, take out the plug, and pour in about 1 to 2 gills of kerosine oil and ignite it. The stump will smoulder away, without blazing to the very extremity of the roots, leaving nothing but ashes.

NOTES OF THE WEEK.

—— The old Pelargonium, or as it was commonly called, Geranium Gauntlet, is still the most popular kind in the London market. Mr. Bennett, of Rabley, has a wall covered with this variety 215 ft. long by 8 ft. high; it is now coming strongly into bloom.

—— Perhaps the finest of all flowering trees for cities and districts that suffer from a smoky atmosphere is the great flowered Magnolia conspicua. Trees of it on the warmer soils in suburban London are now strikingly beautiful.

—— Nuttallia cerasiformis is the name of a free-flowering but not showy shrub, with white flowers, which are remarkable for affording us the true Hawthorn scent early in the year—May blossoms in March, in short. It grows and flowers very freely in Mr. Parker's Nursery, at Tooting.

—— Erythronium giganteum of Western America is now in flower in Kinghorn's nursery at Richmond and in other gardens round London. It is not by any means so pretty a plant as the Erythronium of our European Alps and gardens. It may, however, merit culture from its distinctness.

—— As we write the orchards in the valley of the Thames begin to show their buds and flowers, and in a few days the recently blackened trees will be clouds of white Plum blossom. For some weeks to come London market gardens and Kentish orchards, and, indeed, orchards and fruit gardens in many northern lands will be, for the time, our best flower gardens.

—— One of the most offensive nuisances and air poisonings is caused by the laying down of the wood pavement, now becoming common in London. This is all the more to be regretted because the wooden pavement is not so lasting, or on the whole so satisfactory as the best asphalte. For cities, so far as our present knowledge goes, nothing equals the asphalte. When kept free from dust, &c., by aid of the hose, it is also most conducive to the purity of the air and consequently of health.

—— Mr. J. Meehan fancies that in cold countries, at least where the Eucalyptus will not grow, marshy districts would be improved by the planting of vigorous hardy Conifers and other evergreen trees. We have long thought so, too. If malaria be caused by a large area covered or partially covered with decaying vegetation, it is reasonable to suppose that the substitution of abundance of living trees, withdrawing redundant moisture from the soil, and perhaps charging the air with aromatic vapours, will produce a very different and healthy condition of both air and soil.

—— The beautiful dwarf Cypripedium acaule, of the North American woods, is now one of the most charming plants in London Orchid-houses. Although the plant is very dwarf (3 in. high), the flowers are as large as those of the tropical kinds, while the colour is even more beautiful. These little plants, flowering in March in English hothouses, have, as yet, made few or no fresh roots, but both flower and leaf are well sustained by the nourishment stored in the roots last year in their native woods. Although now to be seen in Mr. Bull's hothouses, it may be as well to add that the plant is as hardy as the Lily-of-the-Valley. Perhaps the most interesting way of growing it in Britain would be naturalised in woods with a sandy or peaty soil.

—— The gorgeous mass of Daffodils in some of the nurseries round London may now serve to point out the value of these plants in garden scenery, apart from their high individual beauty. Fine collections have been formed; it is now for the public to treat the stronger and nobler kinds with a view to their effect in the wild garden and pleasure ground, as well as in the borders or bulb-beds. These remarks occurred to us on seeing the rich masses of the variety of Narcissus bicolor, called Horsefieldi, and the Butter-and-eggs Daffodil, among many other kinds, in Mr. Ware's Nursery, at Tottenham. No tropical flowers can do more for their own woods than these and like plants may do for our gardens in spring, and to them the kind of spring matters little. We believe that as the public become familiar with the merits of these plants, they will be used to an extent they never were before since the days of Parkinson; and mainly because, in addition to resuming again the culture of these flowers, we have wider ideas as to their use, and do not restrict them, as in old times, to the border. The wild garden round country houses should show crowds of them, as many of the finest kinds are as hardy and as easily grown as any native weed.

—— A beautiful new Odontoglot was shown on Wednesday last at South Kensington. It has smooth compressed one-leaved pseudobulbs closely arranged along creeping rhizomes, the leaves being of a deep glossy green colour. The flower-spike is slender, about 18 in. in height, and branched, bearing from twenty to thirty pure white, purple-spotted flowers; the sepals and petals have undulated margins, and their apices are drawn into long tapering points. The lip is yellow at the base, boldly streaked with rich dark brown, and the crest is whitish and two-lobed. The flowers may be likened to those of O. nævium, but are fully three times larger than those of that species, the white being purer, and the purple spots fewer and larger. It is quite distinct as a species, and when more plentiful cannot fail to be extremely popular. It is one of Mr. Bull's recent introductions from Ecuador, the specimen shown, and to which a first-class certificate was awarded, having flowered in the collection of Mr. Spencer Brunton, of Beckenham.

—— The old double Primroses, supposed to be getting scarce, and certainly so in private gardens, are now sent in considerable numbers to the London market, both in the form of cut flowers and plants.

—— Very fine Hydrangeas, in pots, may already be seen in Covent Garden, though in small batches. They do not seem quite in their place among spring flowers.

—— Messrs. Warne and Co. will in future publish Mr. William Paul's books on gardening, and this week that firm has issued "Villa Gardening," which embodies in the form of a series of letters very good advice. The woodcuts, however, are unworthy of the book.

—— Cox's Orange Pippin is a novelty in April; we have just received a very fair sample from Messrs. Cox, of Donington, near Spalding. The fruit was somewhat shrivelled, but of a high and delicate flavour. The presence or absence of a popular fruit in Covent Garden is not always evidence of its keeping qualities. Probably our Apples could be kept much longer than is the rule at present, if fruit rooms were made to preserve a very low and equable temperature. Frequently they are so constructed as to be influenced by every slight change, and to preserve a warm temperature; a great deal depends on locality, too, as regards the keeping of fruit.

—— Easter Beurré is still the best late Pear known. We speak of the fruit as it comes to the London market from France at this season. Very early in the year the flavour is not so good as at present. Easter Beurré, as grown in England, ripens much earlier, and has not the same flavour; but grown on white walls, as in France, it might prove valuable in the southern counties. Fruit-raisers, wanting an aim, might do well trying to get a fruit as good as Easter Beurré and suited for our climate. The finest fruits of this variety we have ever seen were from California. If they would keep as these French Pears do, it would pay to send them all the way across the plains and ocean by express. Probably, however, the sunny plains would produce a thoroughly-matured tender-fleshed fruit that would soon decay; the cooler foot hills should give fruit more likely to last till Lent.

—— A seed and nursery trade association has lately been formed in Scotland, the main objects of which are:—"1st. To hold an annual meeting of the association, at which members may bring forward any matter of importance, notice of the same being given to the secretary one month before the said meeting. 2nd. That it shall be competent for members to lay before the committee through the secretary any case in which they may feel themselves aggrieved, or laid open to vexatious claims in respect of complaints of the growth of seeds, failures of crops, &c., and the committee shall advise as to the best course to pursue, and (if need be) obtain counsel's opinion in the case. 3rd. To use all endeavours to check and put down the vending of adulterated and falsified seeds of all kinds, either in this country or abroad. 4th. To watch over the interests of the trade in any legislation that may be proposed affecting the same." The annual subscription has been fixed at one guinea. Mr. David Roughead has been appointed chairman, Mr. David Cross, vice-chairman, and Mr. R. T. Mackintosh, secretary and treasurer for the ensuing year.

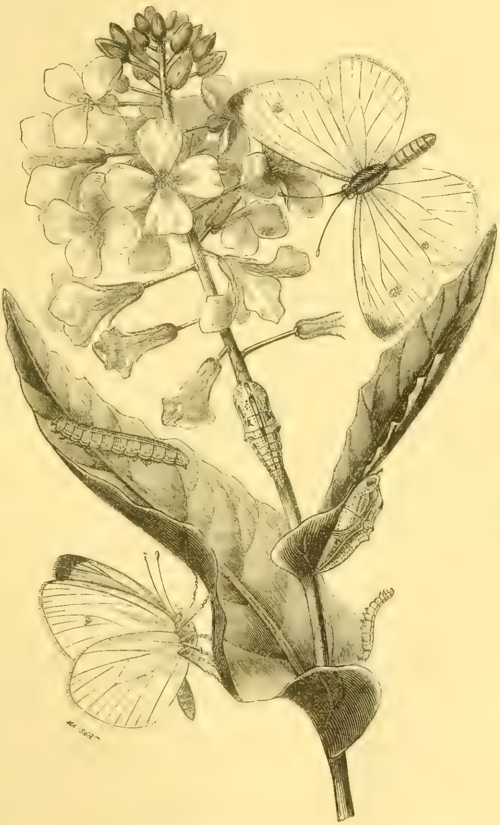
Starting Pot Vines Early in Autumn a Disadvantage.—There can be no doubt that if Mr. Temple's plan of retarding pot Vines for early fruiting be successful, it will be a great advantage, inasmuch as in many places a number of Vines have to be got ready for placing in their forcing quarters by October or November; Vines started into growth then, or even a month later, have a very short period of rest, and, therefore, they never start so freely into growth as Vines do in spring; the buds are long in "moving," the leaves are still longer in appearing, and a good many of the buds never start at all. Therefore, it would be a profitable plan to be less hasty in starting pot Vines in autumn. Some affirm that pot Vines started at Christmas are as far forward in April as those started on the 1st of November; and while the latter are only provided with a branch and bunch here and there, the former produce a heavy crop. It is pretty well understood that Vines dislike being started into growth in autumn; six weeks or two months longer rest is of material benefit to them, and no disadvantage in the end so far as earliness is concerned.—J. Muir.

THE KITCHEN GARDEN.

WHITE CABBAGE BUTTERFLY.

(PIERIS RAPÆ.)

The accompanying woodcut represents the smaller Cabbage butterfly, which is very common in this country. It closely resembles the larger species, and if there were nothing but the difference in size to distinguish the one from the other, it might be difficult to say that it was not a stunted variety of it; but the eggs are different, and so are the caterpillar and pupa, and their differences are constant, so that there can be no doubt as to the species being distinct.



The Lesser White Cabbage Butterfly.

The egg of the large white Cabbage butterfly is oval, and is deposited on the under sides of the leaves in clusters of thirty or forty together; that of the present species is more attenuated at the point, and is likewise deposited on the under sides of the leaves, but singly. Its caterpillar is green, with a yellowish stripe down the back and along each side, and it is so closely covered with hairs as to seem velvety. The caterpillar of the large white butterfly is bluish-green, and has a similar, though more decided, arrangement of colour, but it is sprinkled over the green parts and along the lines of yellow with comparatively large black dots. The chrysalis of the latter is pale green, speckled with black, while the chrysalis of the smaller species is pale flesh brown freckled with black. There is a third white Cabbage butterfly with which this may be confounded, Pieris napi, or the green-veined white, a kind readily distinguished by the veins on the under side, and more especially those of the lower wings being edged with green scales. All three species feed upon the plants of the Cruciferous Order, such as Cabbages, Turnips, and Rape, although by no means exclusively; many others of our garden plants, such as Mignonette, Nasturtium, &c., also suffer from them, but not to the same extent. No better remedy or alleviation seems to have been found for this destructive insect in this country than hand-picking; but we find that in America, to which country the species has of late years extended, other measures have been found effectual. There, salt sprinkled over the Cabbages, &c., is the common remedy, but the following plan has been recommended by a Mr. Quinn to the New York Institute Farmers' Club. He says—"I have tried no fewer than fifteen different decoctions, and find the best result from the application of a mixture composed of twenty parts of sulphate of lime, one part of carbolic powder, and three or four parts of quicklime. This I sprinkle in small quantities upon the leaves and parts affected, making the application early in the morning before the dew is off or after a shower. Frequent repetition is sometimes necessary." The introduction of this species into North America and its spread there is an interesting chapter in its history. It was unknown in the New World previous to 1859, when for the first time it was taken at Quebec. In 1863 it was captured there in larger numbers. It is supposed to have been introduced in the egg stage. As already said, the eggs are deposited on the under sides of the leaves on which it feeds, and the hypothesis is that some rapid steamer from Britain had brought with it a supply of fresh Cabbages, and had come so quickly that the store was not exhausted before it reached Quebec—that the remaining Cabbages were thrown out as refuse, or given away on arrival—that there were eggs upon them which hatched, and the emerging larvæ, after making a start of growth on the old Cabbages, unfortunately found themselves near fresh plants to which they made their way and on which they fed and flourished. The climate was suitable to them, although the cold makes greater havoc with the chrysalids there than here, and they soon began to spread all around. In 1864 they had spread 40 miles on every side of Quebec. In 1866 they were taken in the northern parts of New Hampshire and Vermont. In 1868 they had advanced still further south, and were seen near Lake Winnepesaugee, and in 1870 they were taken around Boston, Massachusetts, and a few stray specimens in New Jersey. In and around Hudson City and West Hoboken they were very abundant—so much so, as one observer said, that after the butterflies came out, the Cabbage garden looked as if there was a small snow-storm going on. In 1871 they destroyed £100,000 worth of Cabbages in the vicinity of New York alone. In 1874 they had reached Washington and spread into Virginia. The insect, however, does not seem to have made an equally rapid progress to the west, but in 1872 it had reached as far as Belleville and Trenton, Ontario. In 1873 it reached Port Hope, and by 1874 it had spread all over Ontario. One curious circumstance attending the invasion by this butterfly is that in many parts of the country which it has colonised a new variety of a bright sulphur yellow, called by Mr. Scudder P. novangliæ, has made its appearance. American entomologists are still in doubt whether this is a climatal or a food change. It has been noticed by some of them that when the larvæ, hatched from eggs laid by white individuals, have been fed upon Mignonette, the produce has been this yellow variety; whether the food was the cause or only an accidental coincidence is still under consideration. We do not know whether the experiment of rearing the larvæ of P. rapæ entirely on Mignonette has been tried in this country, nor with what success, although, from the above facts being well known to our

English lepidopterists, it seems almost a foregone conclusion that the experiment has been tried. Perhaps some of the readers of The Garden may be able to enlighten us on this point.

A. M.

FORCING ASPARAGUS IN OPEN-AIR BEDS.

The forcing of permanent beds of Asparagus, although by no means new, does not appear to be so generally adopted as might be expected. That a greater number of heads may be cut from a given space under glass, by lifting well-established crowns and planting them thickly on a gentle bottom-heat, I readily admit, and for the earliest supply—from November until the beginning of February—I have not yet found, in all respects, a better plan; but for a supply during February and March permanent beds, gently forced, will yield Asparagus for a number of years quite equal to that produced by summer beds. The beds from which we get our February and March supplies are well established; they are 5 ft. wide, and are surrounded by a brick trench 2 ft. wide and 3 ft. deep, the wall next the beds being pigeon-holed. Over the bed is a movable span-roof, made in 16 ft. lengths for four lights each side, 4 ft. wide. These beds are dressed with rotten manure in November when the trenches are emptied of decayed forcing material, and re-filled with leaves and stable manure in proportion to the time when they are required to come into bearing. The earliest division we fill principally with manure, and keep it constantly replenished, in order that the heat may not decline; nor must it be allowed to get too hot, as the more gradually the growth is excited the finer will be the produce. The lights, which are put on early in December, are covered with litter during frosty weather, uncovering on the south side during every interval of sunshine, to which, in fact, the latest division (that comes in during March) is indebted for nearly all the heat it gets, the trenches being only filled with leaves. Under these conditions the growth is natural and gradual, and not subject to sudden fluctuations of temperature, and, owing to the roots being thoroughly established and gently excited into growth, the produce is tender and highly flavoured. In late springs, like the present, such contrivances are invaluable, as regards maintaining a good supply of this favourite vegetable, until it is plentiful on open beds. When the root is removed and cutting discontinued, a good soaking of liquid manure starts the young growth afresh, and, by shifting the course of forcing, so that the earliest bed of one year is the latest the next, such beds may be kept productive for a number of years. The movable roof, too, need never be idle; it may be re-erected on a bed of coal ashes, and used for hardening off bedding plants; while later in the summer it may be elevated on brick piers, for sheltering such plants as suffer from exposure to heavy rains. In autumn we strike most of our variegated and tender kinds of Pelargoniums under its shelter—in fact, the uses to which it may be put are unlimited.

James Groom.

Henham.

SEAKALE AND ITS CULTURE.

This, though a delicious and wholesome vegetable, seldom finds a place in the villa garden, and the middle and lower classes are nearly wholly unacquainted with it. By a little forcing it may be had in perfection from the end of November or the first week in December till the end of May—a period embracing the whole of what are termed the dead months. Vegetables as a rule are not improved by forcing, but Seakale forms an exception, the forced shoots produced at Christmas being more crisp and delicate than those grown out-of-doors. While most vegetables are spoiled by over-cooking, this, on the contrary, can scarcely be boiled too much; and when it is well boiled, it should be thoroughly drained, and allowed to remain a few minutes before the fire, in order that a further portion of the moisture belonging to it may be evaporated. Seakale grows plentifully on our western shores, and from very early times people residing near the coast have been in the habit of watching when its shoots and leaf-stalks have begun to push up the sand and gravel in March and April, in order that they might cut them off underground and boil them like ordinary Sprouts. One authority states that it was grown in quantity in this country and sent to the Continent more than two hundred years ago. But, be that as it may, it was not much known about London until the middle of the last century, when it was cultivated by Dr. Lettsom at Camberwell, and it was through his instrumentality that it was brought into notice in the London markets. It has now become a common and almost an indispensable vegetable in all gentlemen's gardens, and when properly dressed and served up like Asparagus, it is very little inferior to that vegetable.

There are various modes of propagating Seakale. Formerly it was raised from seed, but this, at best, is a tedious process, and requires a long period of patient waiting before the produce is ready for use. When gardeners of the old school sowed their seed, they never expected to cut Seakale fit for food for three years afterwards. Even now some of the London market gardeners raise their plants from seed. When this plan is adopted, a piece of ground should be selected and prepared by deeply digging and manuring it. A bed or beds (according to the quantity required and the length of the beds) 4 ft. wide must be formed; draw the drills about 2 in. deep, three to a bed, and 15 in. apart, and sow the seeds pretty thickly. They will require no care the first season beyond keeping down weeds. When the plants are twelve months old they must be lifted, cut into 6 in. lengths, preserving the crowns, and throwing the other parts of the roots away. These prepared plants must be planted at once, and will make strong stools for forcing in the autumn. The great objection to seedlings is that they occupy the seed-bed for one entire season without any profitable return. The most modern way of increasing Seakale is by means of pieces of the root which are cut away when lifted for forcing. Every inch of Seakale roots will form a plant the same as bits of roots of Horseradish or Dandelion. These pieces of roots must be taken care of and put into a heap in a shed until the whole plantation is lifted for forcing. The best must then be selected, cut up into pieces about 3 in. or 4 in. in length, and laid in a heap by themselves. The remainder may be either burned along with the prunings of fruit trees or consigned to the rubbish-heap, where they should lie until there is no possibility of their starting again into growth. When the cuttings are prepared they should be buried temporarily as soon as all the roots have been taken up. This may be about the end of January or early in February. By the end of March or early in April these roots will have pushed several eyes, and emitted a quantity of white feather-like rootlets. The top and bottom ends of all the cuttings may now be easily discovered, and all the eyes, except the strongest one on the top, should be rubbed off, afterwards they should be dibbled into the ground with the head end upwards.

Although Seakale may be taken up and forced at mid-winter in any situation in which there is a temperature of 60°, still there must be a plantation left for producing the Kale in the open ground. In many gardens this is done by covering the crowns with pots or boxes made for the purpose, or they may be hooped over with Hazel sticks, and covered with a mulching of litter to exclude light; in fact, in many places the bulk of the Seakale is forced in this way. In making a plantation to furnish heads without being taken up, it may either be formed of one-year-old plants, or of sets of cuttings which will make equally good stools. The plants raised from seed give trouble in reducing the number of their crowns; whereas sets, if properly made and treated, give hardly any, and in one year make almost as good crowns as real plants do. In planting, three plants should be placed in patches in the form of a triangle, 2½ ft. from each other, in rows, and the rows should be 3 ft. asunder. The ground may be intercropped with Lettuce or Cauliflowers, which should be removed before they interfere much with the Seakale. When planting with the intention of taking up the roots in autumn, they should be planted in rows 2 ft. apart, and 9 in. asunder in the rows. The plan of forcing Seakale with fermenting materials, for very early use, is growing somewhat out of date. When it is required by the end of November, or the first week in December, the best crowns and those that are best ripened should be taken up; those are the most suitable on which the leaves wither the earliest, and these should be selected, as it is difficult to get Seakale to start early, notwithstanding its being the easiest of all vegetables to force. The crowns being in readiness, a hot-bed, in the absence of a Mushroom house, should be prepared and covered with a frame, and a few inches deep of soil should be placed within the frame, in which the roots should be planted, and that as thickly as they can be conveniently stowed together. A one-light frame, 5 ft. by 4 ft., would supply Seakale for a large family. The frame may be covered either with mats or straw hurdles, the points being the retention of heat in the frame and the exclusion of light. When required very early, the heat should be kept up to 65° or 70°. A few roots should be introduced at intervals of two or three weeks, according to the demand. In order to have natural Kale, as it is called, we cover up the crowns in the open ground about the end of March, or just before they begin to bush, with tubs or pots, or anything that will keep them in the dark. From those crowns last covered we have a supply to the middle or end of May. For the last cutting in the market gardens the crowns are covered with soil from between the rows to the depth of 6 in., and as soon as the point of a shoot is discerned above the ridge it is fit for cutting. The soil should be drawn away with a spade and the shoot cut over close to the crown. When the Kale is all cut the ridges should be levelled down, or if pots have been employed they should be removed, the ground forked over, and the space between the rows filled with Lettuce. Q. R.

NO MORE HOLLOW OR SPONGY CELERY.

The following system of culture, properly carried out, will be found to meet Mr. Thomson's wants (see p. 255):—In the first place, the seed must not be sown too thickly, and as soon as seed leaves are formed, thin out the smallest plants, leaving the strongest an inch apart, and keep them close to the glass, in order to prevent them from becoming drawn. As soon as the plants are fit to handle, prick them out 6 in. apart on a bed prepared for them in the following manner:—If for an early crop, employ a frame set on a slight hot-bed, on which place a compost consisting of equal parts of well-rotted manure and soil, mixed together and made quite solid to the depth of 4 in. When finished, the surface of the bed should not be more than 6 in. from the glass, as the frame can be gradually raised as the plants increase in height. Ventilate early in the morning, when the weather is favourable, and close early, slightly damping the plants overhead. As the season advances, ventilate more freely by degrees, and after a time the frame may be lifted off altogether, paying every attention to watering when required. In preparing the trenches, a line mark should be drawn every 3 ft. apart, according to the number required; take the soil one spade deep out of every other space, and fill up with well-rotted manure, mixing it with the second spit of soil, and leaving a hollow up the centre in which to place the plants. Owing to Celery being a surface-rooting plant, it is best to make the trenches tolerably wide, as, in that case, the soil can be levelled back, with the exception of 18 in., which should be left for the Celery row; the intervening spaces can be prepared for other crops, but care must be taken that they do not interfere with the routine culture required for the Celery, or more loss than gain might be the result. Four or five days previous to planting out, run a sharp knife down the centre of each row the depth of the compost, and do the same cross-ways, finishing off with a thorough watering, which closes the openings and prevents any check to the plants; in four or five days' time a spade may be run under the plants, which may then be lifted, placed carefully on a hand-barrow, and conveyed to the side of the trench, in which they should be planted 10 in. apart and 1 in. deeper than they were before they were moved, placing the soil firmly round each plant. When completed, give the whole a good watering to settle the soil, and cover the surface with lawn-mowings or half-decayed leaves, which will prevent evaporation and encourage the growth of surface-roots. Should the weather be dry as the plants progress, give them a good watering every ten days or so with clear water, and if manure-water be used, let it be weak, for if given too strong it destroys that delicious flavour and crispness which is so highly appreciated in first-class Celery. A piece of soft matting should be tied round each plant, so as to prevent the weather from breaking down the leaves and the centre from becoming green. Earthing-up should be done gradually and carefully in order that the plants may not be pressed out of shape, and when the soil is in a friable condition. Pinch off the tops of the leaves and raise the matting, as when the foliage gets yellow the Celery becomes discoloured. The cause of Celery growing hollow or spongy is due to over-feeding with rank manures, and sudden checks cause it to run to seed. From the time the seed is sown until the last earthing-up, avoid sudden checks and rank manures. James Smith.

Waterdale.

PARSLEY ALL THE YEAR ROUND ON ALL SOILS.

Though the culture of Parsley is very simple, yet to have an abundant supply of it all the year round is often attended with some difficulty, where spare lights are not available for this purpose, and especially in low-lying, moist situations. On cold, stiff, retentive soils, it frequently dies off. It can be grown successfully in any light, rich ground, that has a dry porous sub-soil. To meet a constant demand all the year round, three or four successive sowings should be made from February to May. The seed should be sown in very shallow drills, and be very lightly covered. When the young plants are up and large enough to handle, they should be thinned to 6 in. distance in the rows. The first sowing or two will furnish leaves all through the summer and autumn, and with care and a little management all through the winter, but I prefer and would recommend sowings in May for a supply in winter. A dry border should be chosen for it, and where there is a south wall a little sown at the foot of it will always be useful in spring. Before severe frosts set in, ample provision should be made for thoroughly protecting a portion sufficiently large to furnish a supply of leaves during several weeks' frost. The coverings should only be put on in frosty weather; and in mild, open weather, the plants should be exposed. The difficulty of having a supply during winter is experienced where there are no spare lights available for protection, and where the soil is of a heavy, retentive nature. Many ways will occur to an intelligent mind to meet these difficulties. Where the soil is unfavourable, a site should be chosen in some sheltered part of the garden, and a bed should be prepared specially for it, by putting a quantity of stone and brick rubbish at the bottom, and on this some soil suitable for the purpose. A sowing made on this towards the end of May, if carefully attended to during the summer months, in thinning the plants and picking off any luxuriant leaves that may be produced, will furnish a supply during the winter, provided it has some protection from frost. Experienced gardeners know the importance of having a good supply of Parsley all the year round, and generally make ample preparation to have it; but young men do not always at first starting see the importance of it, and are apt to think it only a trifling matter. It does not take up very much ground to grow a quantity of it; and it is a safe plan always to sow plenty, for then, with a little attention during the summer, and some protection in frosty weather, a supply is always assured.—" Florist."

New Zealand Spinach.—This, as is well known, is quite different from the common Spinach, but it forms an excellent substitute for it during the summer months, particularly in dry seasons, when it is frequently found to be difficult to obtain the ordinary kind in perfection. The New Zealand kind is somewhat tender, and will succumb to a few degrees of frost, but, being possessed of considerable succulence, it will resist the most intense drought, and is a useful and exceedingly wholesome vegetable, containing a considerable amount of saline matter. A bed of it should be grown in every garden where Spinach is required, and as soon as it can be got sufficiently forward to be fit for use, the sowing of ordinary Spinach may safely be discontinued. The preparation necessary for the reception of the plants, intended to form the bed, is the throwing out a trench some 5 ft. or 6 ft. wide, two spits deep, and of any desired length. This trench should be filled up with good half-rotted stable manure, well trodden down, and on this should be put the soil which has been thrown out, treading all firmly down; along the centre of the bed thus formed the Spinach should be transplanted about the second week in May, each plant being covered for a time with a hand-glass. They may be placed ata distance of 4 or 5 ft. apart. Thus planted, they will soon cover the surface of the bed, and will, during most seasons, afford an abundant supply of excellent Spinach up to the beginning of November. The seed should be sown in a mild hot-bed about the beginning of April, and the plants, when large enough, should be potted off singly, and encouraged to grow, so that they may attain considerable size by the time they are planted out into the bed. Half-a-dozen plants will usually be found sufficient for a large bed.—P. Grieve, *Culford Hall, Bury St. Edmunds.*

A NEW WAY WITH SHALLOTS.

Never plant these under walls or hedges, but in an open exposed situation on well-prepared land that has had just previous to planting a rich surface-dressing. Make it firm by treading; this should be gone over at least twice, as, if the surface be dry, it is scarcely possible to make it too firm. Plant in rows 12 in. apart, and the bulbs should be from 6 to 9 in. asunder in the rows. In planting make shallow holes, to receive just the base of the bulbs only, with a blunt dibble; cover each bulb with a small cone, consisting of about two handsful of charcoal rubbish passed through a sieve, to take stones, &c., out of it. This will prevent the bulbs, at the commencement of their growth, from being lifted out of the ground through the action of rain and surface stirrings. The charred rubbish will crumble away and leave the Shallots standing on the surface of the ground, in the best possible position for producing fine, heavy, well-matured bulbs. Salt and soot make excellent top-dressings for Shallots, either together or separate, and they may be applied either before planting or at any time during growth with the greatest advantage to the crop. Drought, by producing a check, often leads to the attacks of insects or mildew, or it at least makes them more susceptible to such attacks. To secure and maintain, by liberal culture, a free vigorous growth is the best antidote against the attacks of insects or disease. I have given up autumn planting, as I can obtain as good or better results by deferring it until February, or, in the case of a season like the present, until March. E. H.

Ramsey Abbey.

Keeping Potatoes for Late Use.—A well-kept old Potato is superior in every respect to most of the new ones imported from Lisbon and elsewhere; and, even were it not the case, the difference in price would compel many people to use the old ones, consequently the question of preserving the quality of Potatoes becomes important. When Potatoes are kept in buildings, no matter how closely covered with straw, the quality, after the end of March, is usually inferior; but if Flukes, or Victorias, or whatever kinds are relied upon for late use, be pitted on the north side of a wall or belt of trees, they will be found far superior to others retained in any building. Keeping them cool in a medium soil, rather damp than dry, delays growth considerably, and to this end they should be covered thickly with earth. Rocks, Red-skinned Flour-balls, and other late kinds that are usually of inferior quality, are much improved if pitted in a cool place till May. I had some last year in July that were as good as Regents usually are in December. Where earlies and second earlies only are grown, as a precaution against disease those intended for late use should be separated shortly after having been dug up from the other stock, and buried in a cool place in the earth. I think Snowflake, as a second early, will prove a valuable Potato for late use. I have just cut and planted my stock, and although they have laid all the winter thinly on a shelf, they are now as fresh and firm as when freshly dug last summer; but my impression is, that if it be desired to grow this kind free from disease, it must not be over-manured.—E. H.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Spring-planted Globe Artichokes.—These never produce good heads the same year. The best plan is merely to cut away the first stems or flowering spikes, then to give the plants manure-water occasionally, when they will throw up stems equal to those first produced.—R. Gilbert, *Burghley.*

The Winter Cherry as a Vegetable.—Physalis edulis is receiving the attention it deserves from some French horticulturists, and M. St. Quentin, writing in the "Bulletin" of the French Acclimatisation Society, declares the fruit to be superior to Tomatoes. It ought to be grown well, and the fruit and shoots fairly thinned before we could well judge of its merits. Being so hardy and easily grown would be greatly in its favour.

Early Peas.—Ringleader on our south border, sown on November 9th for the seventh time in succession, has withstood the late cold weather well, without the slightest protection, and is now (April 1st) reaching the stakes. This Pea, being very hardy, can be wholly raised out-of-doors, without the usual trouble attending the production of Early Peas, thus saving much time, a valuable commodity just now. R. Gilbert, *Burghley.*

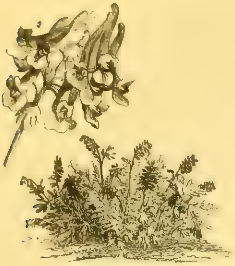
Onions (A Subscriber).—There is no better plan of fastening these in very light soil than that of rolling the beds. We have seen beds rolled quite firm, even after the plants were above ground. They afterwards grew away quite strongly, and were not injured by the rolling.

THE FLOWER GARDEN.

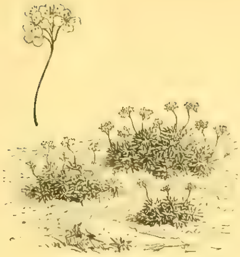
HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

It has occurred to us that engraved representations of the various types of hardy flowers now in cultivation given week by week as they open might be of interest to many persons now beginning to cultivate these plants; we therefore begin this week, and hope to continue our pictorial record for the course of a year from the present time. It may be remembered by some of our readers that in the year 1873 we took special pains to record all the hardy plants as they flowered in the various collections about London. The weekly entries of the very numerous species that then flowered afford useful reference to those who desire to make their gardens of hardy flowers gay at any given season. The illustrated record of the various types may be suggestive to some for whom a long list of Latin names has no attraction. Our record shall mainly consist of plants that have opened into blossom during the six or seven days preceding the date of our issue. There are various hardy plants in flower now in London gardens which we do not mention or illustrate because they have been a long time in flower, and we hope to meet them in due season before April comes again. The plants mentioned and illustrated will in all cases be hardy, and grown without protection, otherwise the record would be worthless as indicating the relations between our climate and the hardy flowers in our gardens.

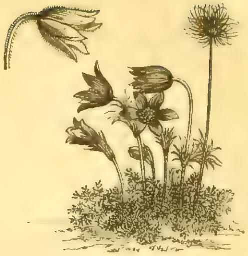
The present has been a most severe spring for hardy flowers in the London district, and, till quite recently, the gardens have presented a very wintry aspect. Thus throughout March there were no such beautiful effects seen in the gardens and shrubberies as in corresponding weeks in 1875. Even the foliage of very hardy Hellebores, &c., was cut down in close London gardens by the wind in March. Some days of clear genial weather, however, have induced many flowers to unfold during the week. The Hyacinth in many hues is now bursting into its fullest beauty all round London, the oblong beds in Hyde Park being like solid masses of infantry on a review day. The showiest flowers of the week are the various double Daffodils which skirt along the upper portion of the Serpentine in crowds, and are gathered into showy masses in Barr's bulb ground at Tooting, where a variety of interesting kinds of double Daffodil are now in blossom. So, too, a number of single Narcissus opened during the week; forms and allies of the Italian Polyanthus Narcissus (N. Tazetta), varieties of the Sweet Daffodil (N. odorus), the graceful and pale N. moschatus, the small Daffodil (N. minor), and N. minimus, which certainly seems to be the smallest possible of all Daffodils. The gem among all the hardy flowers of the week that we have seen is the true old Double Crimson Primrose, in flower in Parker's Nursery at Tooting. It is like a little Camellia, only a good deal richer in colour than any Camellia yet raised. The true old blue Polyanthus is in flower in a secluded nook in the same nursery. These are plants which we hope Mr. Parker will succeed in making plentiful. A singularly pretty effect may be noticed in the same nursery, owing to the accidental occurrence of a number of Grape Hyacinths in a very large bed of the spring Star-flower (Triteleia uniflora). Silkiest, quaintest, and, perhaps, most beautiful flowers of the week, are the varieties of our common Pasque-flower. There is a large bed of these in the Wellington Nurseries, in which a considerable variety in the colour of the flowers may be seen. The summer Snowflake (Leucojum æstivum) has opened its flowers on light soils during the week, and so has the Crown Imperial, which combines the merits of a showy hardy bulb and a fine foliaged plant that disregards the east wind. Fumaria solida and its varieties are in blossom, and the flower-garden Tulips (mostly varieties of Tulipa scabriscapa) have opened to the sun. Two uncommon "Stars of Bethlehem" (Ornithogalum bæticum and O. mutabile) are in flower in Mr. Barr's ground, also two Fritillarias (F. tristis and F. tenella). The delicately fragrant bells of the various kinds of Grape Hyacinths (Muscari), which come up little green spikelets, are deepening their colours, and it is interesting to notice how the odours, all of the most grateful sort, are yet very diverse in kind. Among dwarf Alpine flowers the yellow Whitlow Grass



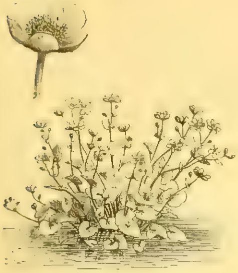
Bulbous Fumitory.



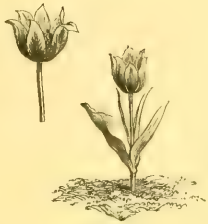
Yellow Whitlow Grass.



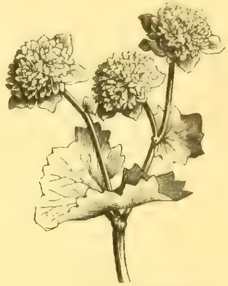
Pasque-flower.



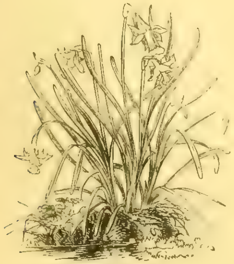
Marsh Marigold.



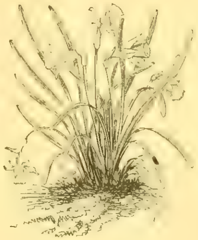
Early Tulip.



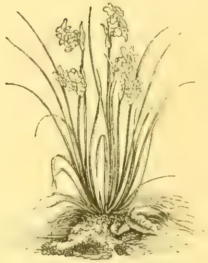
Double Marsh Marigold.



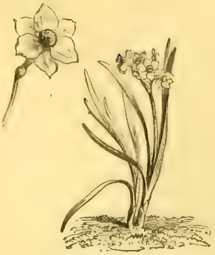
Drooping Daffodil.



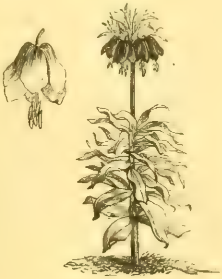
Common Daffodil.



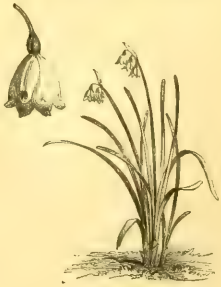
Sweet-scented Narcissus.



Polyanthus Narcissus.



The Crown Imperial.



Summer Snowflake.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

(Draba aizoides) is conspicuous; and among herbaceous plants Doronicum austriacum is the most showy. In the bulb class, the modest yellow and green Gagea fascicularis is noticeable in the Fulham Nurseries, where also the curious Podophyllum Emodi is sending up its flower-stems.

DISTILLING THE BLOOMS OF FLOWERS.

In The Garden of March 25 (p. 300), F. W. C. asks for information as to the best way of distilling the fragrant essence of Roses, Violets, and other flowers. One of the highest authorities on the subject, Mr. Eugene Rimmel, tells us in his charming work, "The Book of Perfumes," that, with the exception of Lavender and Peppermint, our unhappy climate will not permit of flower growing for perfumes at a profitable rate on a large scale. Where the object is to utilise flowers that would otherwise be wasted, distillation may be practised on a small scale with pleasure and profit. A quart glass retort, which will cost only a few shillings at any philosophical instrument maker's, will do to begin with. With stand, receiver, and spirit-lamp, the whole affair need not cost more than 10s. Rain-water should be used in preference to any other, and when the leaves have distilled nearly to dryness, the distillate should be returned to the retort, the old leaves having been thrown away, and new ones substituted. Half a pound of Rose leaves to a pint-and-a-half of water makes a very good change. Our English Roses yield so little perfume that the distillate will have to be re-distilled from fresh petals several times over before a good result is obtained. The neck of the retort must, of course, be kept cool during the operation by having a thick layer or two wrapped round it, upon which cold water is allowed to trickle slowly from a tap or pipe. The receiver, into which the distilled water falls, must be kept cool in a similar manner. To extract the perfume of Violets, Cassia, Jonquil, and Orange flowers, the process of maceration may be adopted. Pure Olive oil or chemically purified lard is melted in a vessel provided with a tightly fitting cover over a water-bath, only a slight amount of heat being employed. The petals of the flowers must be allowed to digest in the warm grease for several hours, care being taken to stir frequently. The grease is then strained through a flannel bag, and the operation renewed until it has been sufficiently impregnated with the odour desired. The perfume may now be extracted by digesting the oil or grease in alcohol in the cold, or it may be used as the foundation of pomades. This process may also be applied to Roses. The still-room was a great institution in old English houses, and ought to be again. Its memory is still kept up in the expression "still-room maid." The grease process would undoubtedly be the easiest to try, for the warmth of an ordinary stove is quite sufficient for the purpose. S. M. N.

THE BEST VIOLAS AND PANSIES.

In referring to Violas, whether they be old or new varieties, it is sufficient for us, says the "Gardener," that they are the best in richness of colours, quantity, quality, duration of bloom, and good habit. Viola Alpha is quite a gem for edging; nothing can surpass it in its dense uniform masses of bluish-purple flowers. V. Sensation makes a perfect mass; its flowers are glowing purple: all summer this variety kept its pre-eminence in the flower garden, but V. Golden Perpetual came to the front in the autumn to fight the young frosts when Sensation lost its gloss. V. Snowflake must be received favourably; its profuse supply of large creamy-white blossoms and dense habit are good commendations. V. Imperial Blue will be wanted much when better known; its chief attractions lie in its delightful mauve-blue flowers, which are produced profusely, and its clear yellow eye. V. Admiration is one of those that lasts out well, having afforded stray blossoms all the winter, showing its hardy nature, and it continues to bloom when the others are over; it is deep violet-blue, showing rays of purple in the eye. V. lutea grandiflora is only superior to lutea major because of its larger flowers; but, owing to their size, they are not produced in such numbers. Speaking about whites, these are more scarce in variety than yellows or blues. White Perfection promises to do well. The worst feature in this division is their tendency to show a blue tint or incline to cream. In bedding Pansies, we are most powerful in the blue section; and a very meritorious and varied assortment may be selected from their number. Perhaps the best of them all is Waverley, a kind in the style of Imperial Blue; but Waverley is likely to supersede it. In colour it is more vivid, in substance and other desirable properties it is quite its equal; but as a perpetual flowerer, taken either in numbers or dense vigorous growth, Waverley is far superior to Imperial Blue. Tory is a very handsome flower and profuse bloomer, but it is deficient in habit, which is thin and weak compared with Waverley; but Tory is still one of the best. White Queen we consider very superior, having the same qualities to recommend it as a bedder as Blue King, from which it is a seedling; but white flowers that come from blue parentage will at certain seasons show a tinge of blue. White Perfection is also a good profuse flowering sort, stands out well, and its flowers are neat and full. In yellows, Buttercup makes an effective ribbon; its rich blotch of rose-crimson enhances its appearance. Golden Bedder may also be grown in quantity; it is very hardy, defying rain and sun alike.

The Age of Standard Roses on the Briar.—It having been stated in discussions as to the merits of the various Rose stocks that Standards on the Briar did not last so long as others do, it is only fair to point out the great age which many Standards have attained. I know a Jules Margottin that has stood in moist soil on a lawn for twenty years, and is now a huge specimen with a healthy head. I fancy there are many instances of much older trees than this. Sometimes when the Standards are not too tall, these old and vigorous specimens form picturesque effects, quite different from the "sticky" things Standard Roses usually are.—W. T.

Origin of our Best Herbaceous Phloxes.—The two species from which our best Phloxes have been derived are P. decussata (which has given race to the most compact-habited plants) and P. suffruticosa, from which northern growers have raised the tall large-blossomed which are now so effective in our borders. All the varieties belonging to these two species grow freely in almost any deep rich soil, and what is of great importance in the case of out-door plants, rain has but little effect on their flowers except it be to make them look even fresher and more beautiful than they otherwise would. Their colours are strikingly pretty, and the flowers being very persistent are useful in a cut state.—B.

The New Violet Prince Consort.—I am indebted to Mr. Lee, of Clevedon, for this new Violet. It seems after a journey to be larger and lighter and about as sweet as Victoria Regina, and Mr. Lee, whose success in the raising of superior Violets entitles him to confidence, considers it superior to any that he has yet raised; so useful and valuable is it to him for bouquet making that he has decided to hold the whole stock until the "orders" for it reach £1000. I hope that a good demand may arise for it, so that those who have ordered it may not have to wait long for their plants. It is also to be hoped that some one will undertake to mount our double Violets on longer legs, so as to make them fit companions for our Czars, Victoria Reginas, and Prince Consorts. The length of stalks becomes an unfortunate matter in the use of Violets for bouquet and wreath-making.—D. T. Fish.

Cottage Flowers.—I have recently received from the north two pretty single Primroses, one from Northumberland, found growing in an out-of-the-way cottage garden, a pleasing pale lilac kind that has a remarkably dwarf tufty habit, which blooms most profusely; the other, the beautiful variegated hybrid Primrose, from Mr. Clapham, of Scarborough, figured some time ago in The Garden, under the name of Vesuvius. This was originally discovered in a farm-house garden, where it was raised from seed. It has long narrow foliage and throws up its earlier flowers on single stems, but later in the season sends up scapes of flowers perfect in form and colour, the latter being rosy purple with a wedge of white at the segment of each petal. It partially belongs to the fancy Polyanthus group. Its name is hardly suitable, especially as there is another Vesuvius in the field.—A. D.

Tropæolum polyphyllum and its Culture.—Tropæolums are not sufficiently appreciated by cultivators, though some of the dwarf, compact-growing annual forms of T. majus are often used for bedding purposes. T. Lobbianum, it is true, with some of the forms which have been bred from it, is occasionally seen illuminating the roof and pillars of a cool conservatory and the formal beds of the summer parterre, but how seldom we now see specimens of the exquisitely elegant greenhouse pot climbers, T. tricolorum, T. brachyceras, or T. azureum, and in how few gardens are the brilliant hardy T. speciosum and the very interesting T. polyphyllum! Mr. Wheeler, of Warminster, writes to the "Florist" thus concerning the last-named kind:—"Tropæolum polyphyllum is a hardy tuberous-rooted plant from the mountains of Chili. Being impatient of confinement, it seldom thrives under pot culture, and the most suitable place for it is the open border or the rockery, with plenty of soil for the rambling tubers. Most common garden soil suits it. When a bed of this plant is well established, the ground is covered with a mass of foliage, and it makes a grand display in June; after blooming for a month or so, the foliage disappears for the season, and the ground may be occupied with summer plants without detriment to the Tropæolum tubers, which will send up their flowering stems again in the spring. It does not climb like the other tuberous species, being decidedly decumbent, lying flat on the ground and throwing its pretty glaucous foliage and golden-yellow flowers upwards. In deep porous soil the tubers descend from 2 ft. to 3 ft. below the surface, out of reach of frost, which may damage them if close to the surface, but at 6 in. below they may be considered safe. If permitted to take its natural course, it will take care of itself."

Shelter for Delicate Primroses.—Some Primulas, such as P. denticulata, purpurea, pulcherrima, nivalis, and others in the open border, often suffer much from being subjected to heavy showers and frost, a circumstance which induced me to try an experiment which appears to have been successful in its results. Two slabs of sandstone, placed so that they may rest on each other, make a comfortable cover sheltered from the south-east and west, open to the north, but sheltered by a plantation of Fir trees—thus situated, Primula denticulata has bloomed well through trying weather, and several other species are coming on well; of course the shade retards the time of blooming, which is perhaps an advantage, as it gives a better chance of good weather.—George F. Wilson, *Heatherbank, Weybridge.*

A Bright Spring Border.—Spring gardening embraces so many plants that in any place where it is carried out in its entirety it may begin with the Squills, Snowdrops, and Hepaticas, and end with Silenes, Pansies, and Daisies, but in mid-spring, that is, during the month of April, it is possible to find plants that will produce some most effective combinations. One specially bright arrangement produced by plants that are hardy and easily propagated is as follows:—Front row, good patches of the old Aubrietia purpurea; next, strong plants of bright red single Primrose; then yellow Tom Thumb and Pansy Yellow Boy supported by the early blue Myosotis dissitiflora; the whole backed by a broad line of Arabis albida and a row of the early blood-red Wallflower. The Wallflowers and Forget-me-nots must be raised from seed, the former sown in March and the latter in July. All the rest are easily propagated by means of cuttings and division of the roots.—A. D.

Slugs in the Flower Garden.—Slugs have this year been unusually troublesome in open borders, rock-work and root-work suffering alike, and unfortunately they have made a raid upon the best plants, such as Colchicum vernum, Primula denticulata, Omphalodes Lucillæa (of these the leaves were eaten down as fast as they appeared), and Hepatica flowers, especially those of H. argulosa. If a few Cabbage leaves be placed the day previous round the plants to attract the enemy, a lodgment will soon be made on them; they can be looked over in the morning and disposed of, thereby saving the blossoms of our favourites from injury. I have recently used collars of perforated zinc, recommended to me some years ago by a clergyman at Ryde, Isle of Wight. For a single Hepatica a strip 1½ ft. long 6 in. deep will suffice, joining the ends with galvanised iron wire; to enclose small Lily beds, use strips about 6 ft. long, joined with wire as required; Cabbage leaves must also be laid round in order to trap any stray slugs within the enclosure. A fine Hepatica angulosa in a border unprotected from slugs, had every flower devoured before it had fully bloomed, but, since the zinc collar has been used, it has been untouched. A great Lily grower in my neighbourhood tells me that Barley chaff will keep off slugs, even after it is quite wet. Mr. Salter uses old greased boards in place of Cabbage leaves to attract slugs.—G. F. W.

Properties of Show Pansies.—The following are those printed for the guidance of the Scottish Pansy Society: Form.—The outline should be a perfect circle, and free from every notch, serrature, or unevenness, the petals lying close and evenly on each other. Texture.—The petals should be thick, and of a rich glossy velvety appearance. Colour.—In all two-coloured flowers, the ground colour (of whatever shade) should be perfectly alike in all the three lower petals, and should be circular, and of equal width between the blotch and the belt in the three lower petals. Belting.—The belt or margin should be exactly the same shade as the two top petals, and whether broad or narrow, should be of equal breadth throughout, without running into or flushing with the ground colour. Blotch.—The blotch should be dense and solid, and of circular character, free from all running into or through the ground colour, or the eye. Eye.—This should be bright gold or orange, and solid, without mixing or running into the blotch, and should be exactly in the centre of the bloom. Size.—The larger bloom (other properties being equal) should be the better, but no flower should be considered fit for competition under 1½ in. diameter. Selfs, of whatever colour, should be of the same shade throughout; if any shading in dark selfs, it should be soft and delicate; in light selfs whether yellow or white, or any intermediate shade, the larger and denser the blotch (other properties being equal) the better.—At a meeting of members of this Pansy Society, held on 27th May, 1871, blooms of fancy Pansies were submitted, and after a full discussion it was unanimously agreed to fix the following properties as a standard by which to judge them:—First, form; second, texture; third, contrast of colour; fourth, smoothness; fifth, size. Any bloom under 1¾ in. in diameter to be disqualified.

The Pasque-flower (Anemone pulsatilla).—A large bed of this early-blooming plant is now strikingly attractive in the Wellington Road Nurseries. Of its forms, which are various, we have now before us lilac-purple, reddish-purple, and bluish-purple, all of which vary more or less in the breadth of their floral segments. There are likewise white, dark velvety purple, and double-flowered varieties. The Pasque-flower is a somewhat rare British plant, but on the mountains of France and Austria it may be seen in profusion. The lovely little blue-flowered Anemone appenina is also showing colour, and only wants the warmth of a few sunny days to enable it to open its delicate flowers.—B.

Early-flowering Hardy Plants in the North.—Although the weather since the beginning of March has been severe, Snowdrops and Crocuses, now nearly over, have flowered beautifully. Saponaria calabrica, sown in pots about the end of August, and transferred to the flower-garden in October, begins to open its blossoms early in spring, and continues in bloom for a long time, as does also the White Arabis. Pulmonaria angustifolia is another early flowering plant, and everybody is acquainted with the strikingly pretty blossoms of Aubrietia deltoidea, which is the best of the Aubrietias. A. purpurea does not bloom quite so early, nor does it continue so long in flower; but, nevertheless, it is very beautiful in April and May. Anemone fulgens is an early spring gem, requiring a warm situation, in which it need not be disturbed. Its brightness quite equals that of a scarlet Geranium. Then we have in April Anemone alpina, Erica herbacea, Polyanthuses of various colours, Double Daisies, Iberises of several sorts, and Narcissi. Violas, Pansies, and early Tulips also assist to make flower-beds gay until the month of May.—Henry Taylor, *Fencote, Bedale.*

Against Standard Roses.—We are pleased to note that even some of the Rose-growers who grow mainly for exhibition are getting tired of standards. Thus, the Rev. J. B. Camm gives the following reasons for not employing them in the "Journal of Horticulture":—1. They are expensive—First, to buy them you must give fifty per cent. at least more than for dwarfs; secondly, they require stakes and tar twine, and they demand much more labour and time than dwarfs. If you bud them you have to watch the growing bud and be for ever tying it up. 2. They do not live half or a quarter of the time that dwarfs do. Their existence is artificial, and they have constantly to wage warfare with their adopted parent. The stock shows fight in every possible way. It throws out suckers from its roots and offshoots (or "robbers," as my children call them) all down their stems. They give the buds no peace during their childhood, and then when old enough to take care of themselves, the unnatural parents die. 3. They are more subject to attacks from insects than dwarfs. The Rose grub hides itself in the stock just where the knife mark is, and comes out with the spring to leave a little greasy grub in the young leaf, which, if not discovered, ruins the bud. 4. They are ugly, ungraceful, like mopsticks, and, when not in flower or foliage, are unsightly on the lawn. 5. The stocks are most difficult to procure. I had to make presents to the farmers whose hedges were ravaged by my Briar-men, and had to fit out the latter with new clothes when they had done; for, as they pathetically said, "they were scarcely decent, and really the police be that sharp," &c. Then, too, the stakes are of great moment, even if you live, like I do, in a "weedy countrie."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Dahlia Maximiliana.—This is a new species from Mexico, with Peach-blossom-coloured flowers; seeds of it are now being offered by American seedsmen. It may be the parent of a new race.

Californian Dog's-tooth Violets.—I am pleased to say my plants of Erythronium giganteum are about to flower vigorously in the open ground in sandy soil in a fully exposed position. I, however, have always failed with the Yellow Erythronium, so common in the Atlantic States.—T. H.

Violet Culture.—This spring we have had Violets in abundance. We take off the runners and strike them under hand-lights. When struck, we plant them on a north border, using road-scrapings and leaf-soil, in which they make fine large plants by October. They can then be removed to a cold pit, in which ashes are sprinkled between them to protect them from slugs.—R. Gilbert, *Burghley.*

Bulbocodium vernum.—This looks well associated with the Scilla sibirica or on bare slopes in the wild garden. It grows about 6 in. in height, and has lovely bright purple flowers, the tints of which vary in different plants. Two or three flowers generally spring out of the same bulb and appear before the leaves are fully developed. Several bulbs of it planted together will produce a fine effect, particularly as they are often in bloom as early as February.—Oxon.

PLATE XV.

BOXALL'S INDIAN DENDROBE.

(DENDROBIUM BOXALLI).

By F. W. BURBIDGE.

The genus Dendrobium is one of the most beautiful and the richest in species in the group of Orchids to which it belongs, the most attractive of which are distributed throughout the different Presidencies of the Indian Empire, and especially in Moulmein, Assam, and Burmah; while others are found in Ceylon and Manilla. As a rule, the Indian species are epiphytal, in their native habitats growing upon trees, both living and dead, and both in sun and shade, the result being that those grown in the sun make shorter and plumper pseudo-bulbs than those which exist in more moist and shady positions, and, as a rule, the flowers, if not so large, are more brilliant. The colour of many Orchids is in inverse proportion to the intensity of the light to which they are subjected. All who have seen Dendrobes flowering in India remark that while we obtain stronger growth and a larger quantity of flowers on many of our home-grown plants, yet that these flowers are pallid compared with those borne by native plants, which, in many cases, are literally scorched and withered up, during the dry season, by the Indian sun. In addition to species found in India and the adjacent islands, however, a very distinct group of Orchids is found in Australia; of these the "Rock Lily" (D. speciosum) is the best known example, and the beautiful D. bigibbum, with its rosy-purple Phalænopsid-like flowers, the most rare. Two or three other species are also found in China and Japan; but, as has been previously stated, the most beautiful of the whole group are Indian, and consequently require a warm and humid atmosphere (that of an ordinary well-managed plant stove), when making their growth, with copious supplies of water at the same time, and a dry, airy, and sunny position in a vinery or Pine-pit when at rest. Some of the finest specimens of D. Wardianum, D. Devonianum, D. crassinode, and D. Bensoniæ, perhaps ever seen were grown on in a warm humid plant-stove, to which air was cautiously admitted during mild nights as well as during the day time; when their growth had attained full size they were removed to a warm and sunny vinery to ripen, and this is the best system to adopt, *i.e.*, provided a regularly-appointed East Indian Orchid-house is not at command for the culture of these and similar-habited plants. As a rule, Dendrobes may be readily propagated either by layering the old pseudo-bulbs or by cutting them into lengths and inserting them as cuttings or by dividing strong plants or taking off the side-growths which appear pretty freely on the half-ripened pseudo-bulbs of the previous year. In growing these plants over-potting must be carefully guarded against, for if the roots be embedded in a mass of sour compost they speedily rot, and the energies of the plants are then diverted to the formation of new roots instead of to growth and bloom. Many of the species grow best in small pans, or hanging baskets suspended near the light, and the pendulous-habited kinds look more at home thus managed than when potted and staked in an upright and unnatural position. A compost consisting of fresh fibrous peat, living Sphagnum Moss, and well-dried horse manure suits most of the varieties, coarse, well-washed river-sand being added to keep the whole porous; and a well-drained bottom is highly essential, for although these plants will luxuriate if deluged with tepid water two or three times a day during the hottest summer weather, yet the slightest stagnation or sourness is detrimental to their welfare. The secret of success, indeed, in growing all epiphytes consists in using small pots or baskets of fresh open compost, made firm, so that it does not shift about every time the plant is dipped or watered, and then giving copious supplies of tepid water at the root. It is impossible to over-water plants thus circumstanced, inasmuch as the small well-drained body of compost only holds moisture sufficient to keep the plants in health, and all that is superfluous passes freely away. The culture of many of the most beautiful of all Dendrobes need not by any means be confined to the East Indian Orchid-house, properly so called; indeed, a few well-grown plants of D. Wardianum, D. crassinode, and D. Devonianum look far more beautiful when associated with Palms, fresh green Fern fronds, and other fresh-foliaged plants, than when crowded together among other Orchids, scarcely any of which are interesting to an ordinary observer, except when they are laden with flowers. The following are a few of the best species belonging to this genus; all of them are more or less related to the subject of our plate, the blossoms being borne in few flowered fascicles from the nodes of the long erect or pendulous pseudo-bulbs:—

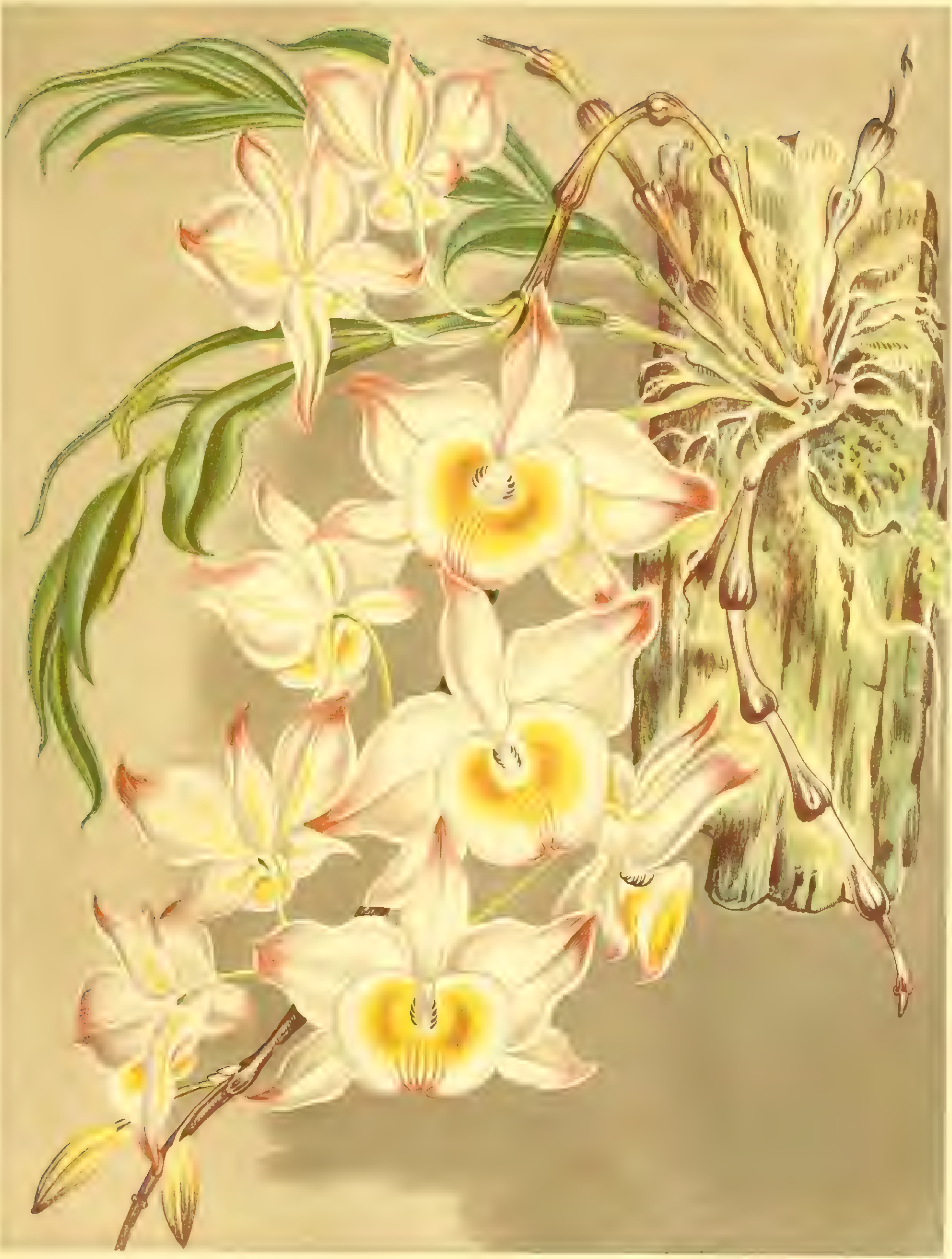
I.—D. Wardianum Section.

Pseudo-bulbs drooping or pendent (except D. Bensoniæ); flowers in pairs or threes at the swollen nodes of two-year-old pseudo-bulbs; sepals and petals white tipped with rosy-magenta or lilac; lips yellow, often with crimson blotches.

D. Wardianum (Mr. Ward's Dendrobe).—This is one of the most beautiful of all Dendrobes at present in cultivation; it was introduced from Assam nearly twenty years ago, and first flowered in this country in 1858. For a considerable time it was as rare as it is beautiful, but recent importations of it having been made by Messrs. Low, of Clapton, it is now so plentiful that there are but few collections in which it does not occupy a conspicuous position. It varies much in habit of growth, and in the size and colour of the flowers, but all its variations are beautiful and well worth culture. The first plants imported from Assam had a weak pendulous habit, the bulbs, under good cultivation, frequently attaining a length of from 2 to 4 ft. Later Indian importations are, however, of a different type, the pseudo-bulbs being erect or sub-erect, as thick as the thumb, and quite as distinct from the older form as D. nobile differs from D. lituiflorum. There can be no doubt, however, that both types are distinct, although they may appear in habit to belong to different species, and when we come to the flowers we find no distinct and characteristic difference. The sepals and petals are about 2 in. in length, pure white in colour, and of a thick wax-like appearance, their apices being tipped with rich magenta-purple. The lip is rounded and has a circular disc of golden-yellow on which are two large crimson blotches, one on either side the throat, and the apex of the lip is also tipped with lilac-purple. It is difficult to imagine a more beautiful object than this plant when in bloom, bearing, as it does, from twenty to thirty large waxy flowers towards the apex of its thick-jointed pseudo-bulbs. This plant is found to succeed best in a pan or hanging-basket suspended near the light, and during its growth should receive a copious supply of moisture, not only at the root but also in the atmosphere, and, what is of almost equal importance, air should be freely admitted during the night as well as in the day-time, for, although the plant luxuriates in a temperature of from 85° to 95° when growing, it soon languishes unless the atmosphere of the house in which it is growing be fresh and airy. This species is nearly related to the thick-jointed Dendrobe (D. crassinode), the main points of distinction being the larger flowers and spots on the lip, which are absent in the last-named plant. The beautiful variety which we now figure under the name of D. Boxalli seems to us exactly intermediate between the two species just alluded to; and along with them must be classed D. gratiosissimum, D. crystallinum, and D. Bullerianum, all of similar habit, and bearing flowers similar in shape and colour. D. Falconeri, which was at one time thought to be the type of D. Wardianum, appears to be a distinct and good species; at any rate, it is the most distinct of all the groups just named. A good coloured figure of this plant will be found in Warner's "Select Orchids," t. 19, and in the "Botanical Magazine," t. 5058, where it is described as a variety of D. Wardianum.

D. Boxalli (Boxall's Indian Dendrobe).—This distinct and beautiful new Dendrobe has been recently imported by Mr. Low, of the Clapton Nursery, where we had an opportunity of sketching it soon after its first flowers expanded. There are one or two distinct forms of it, but all are beautiful, and its free-blooming habit and vigorous growth render it a most desirable plant in a collection. Its pseudo-bulbs are generally pendulous, and in general appearance are exactly intermediate between those of D. Wardianum and those of D. crassinode. The flowers are also intermediate, being shorter and rather smaller than those of D. Wardianum, while the characteristic blotches on the yellow disc of the lip show its affinity with that species.

D. crassinode (Swollen-jointed Dendrobe).—This is a distinct and free-blooming species from Moulmein, from whence both Parish and Benson introduced plants to Kew and elsewhere about 1868. Its knotted-looking pseudo-bulbs vary from 1 ft. to 1½ ft. in length, the flowers being borne in clusters of two or three together at the nodes. When well grown, the last year's bulbs become literally wreaths of white-yellow, blotched, rosy-tipped flowers. It does best in a basket suspended near the light, and requires a copious supply of water when



DENDROBIUM [illegible]

making its growth. Of this plant there are several forms, which vary in the size and colour of their flowers. One richly-tinted form of it, imported by Messrs. Low, and since called D. crassinode var. Barberi, is by far the finest we have yet seen; its vivid colouring, indeed, surpasses that of all other species in this group, D. Wardianum not even excepted. We recently saw a vigorous plant of this richly-coloured variety in Mr. Heriot's collection at Cholmeley Park.

D. Bullerianum (Wentworth Buller's Denbrobe).—This is a beautiful free-flowering somewhat rare species from Moulmein, whence it was introduced by Messrs. Low. Its pseudo-bulbs are erect, or sometimes slightly pendulous, 1 ft. to 2 ft. in length, and the flowers are borne in pairs from the upper nodes or joints of the two-year-old stems. Each individual flower measures from 2 in. to 3 in. across, and the sepals and petals are of ivory-like whiteness, tipped at their points with magenta or bright rosy-lilac. The rounded lip has a large yellow disc streaked with orange at the base. There are one or two other plants closely resembling this in cultivation, and of these D. crystallinum and D. gratiosissimum are the best. Like most of the other species in this section, this species grows best in a humid temperature of from 80° to 90°, after which the growth may be ripened by hanging the plants in the dry atmosphere of a sunny vinery, and thus treated the plants flower much more freely than if grown in a hot temperature all the year round.

D. Falconeri (Falconer's Branching Dendrobe).—Of all Dendrobes this is the most distinct in habit. Its thin pseudo-bulbs being much branched have, when young, a slender and graceful appearance, characteristic only of this species. It grows freely in a warm, humid atmosphere, and seems to succeed equally well in a hanging basket as on a block. The only drawback belonging to the more general culture and appreciation of this plant is that it is somewhat difficult to flower, but this is, doubtless, simply owing to our not having, as yet, learned the proper way to treat it; when it does bloom well it is one of the most gorgeous of all Dendrobes, its flowers often measuring 3 in. in diameter, the white sepals and petals being tipped with brilliant lilac-purple, and the lip has vivid crimson blotches on its golden disc, the apex being white and also pointed with lilac-purple. I have seen this plant well flowered by growing it freely in a warm, humid Pine-pit, and, after its growth had nearly fully developed itself, by placing it in a sunny vinery in which the temperature was not lower than that of the Pine-pit where it had made its growth; but, in the vinery, it had the advantage of a more sunny position and drier atmosphere, so that its knotted bulbs became thoroughly ripened and all the thickest nodes showed a pair of fine richly-coloured blooms. No plant requires more moisture at the root when making its growth than this, unless, indeed, we include aquatics; and copious syringings with tepid water at that time are beneficial. It deserves a place in every collection, and no pains should be spared by growers to discover a method of causing it to bloom regularly. An excellent coloured figure of it is given in the "Botanical Magazine."

D. Devonianum (Duke of Devonshire's Dendrobe).—This is one of the most delicately beautiful of all the Dendrobes, having white magenta-tipped sepals and petals, of membranous or semi-translucent texture, the rounded lips being most elegantly fringed. Well-grown plants of this species often have flower-laden pseudo-bulbs a yard or more in length, forming charming natural wreaths deliciously scented, the flowers themselves being borne in fascicles two or three together at the nodes. This is naturally a pendent habited species, and is well suited for basket culture, suspended near the light when growing; a moist and partially-shaded atmosphere, with a copious supply of water at the root, suits it best.

D. Bensoniæ (Mrs. Benson's Dendrobe).—This distinct and attractive species was found in the Rangoon territory, whence it was sent to England about the year 1866 by Lieutenant-Colonel Benson. It is erect, the pseudo-bulbs being from 1 ft. to 2 ft. in height, and covered with membranous sheaths of a bright silvery colour. The flowers measure from 2 in. to 3 in. across, and are produced on the old or two-year-old leafless bulbs, in clusters of two or three at each joint. The sepals and petals are of pearly whiteness, the lip being rounded with a bold disc of clear yellow and two conspicuous black or dark purple blotches towards the base. The contrast between these blotches on a yellow ground and the white petals is of a very striking description, and quite characteristic of the species. The flowers last a month or even longer in beauty, and well-grown plants bloom very freely. It merits a place in every garden where tropical stove plants are grown. As plants of it can be bought by auction as imported for a shilling or two each, this may be grown in quantity, and large baskets or pans of it in bloom are very effective indeed. Good figures of it may be seen in Paxton's "Magazine of Botany," vol. vii., p. 169; "Botanical Magazine," t. 4160; and in the "Flore des Serres," 7, t. 647.

II.—The D. nobile Section.

Pseudo-bulbs erect; flowers in pairs or threes at the nodes of two-year-old pseudo-bulbs; flowers white, tipped with rose or lilac; lip white often blotched with crimson.

D. nobile (Chinese Dendrobe).—This is so well known as to need little or no description. It is one of the most profuse bloomers in the whole genus, and is grown in nearly every place where cut flowers are in demand. It succeeds either in a pot or in a basket in any fresh open compost, but we have found fresh Sphagnum, peat, and dried horse-droppings to produce the best results. When making its annual growth a high moist atmosphere is essential—that which is afforded by a succession Pine-pit or a vinery in which forcing is going on, with a little care in forcing and retarding the growth of different plants of it a supply of cut flowers, may be obtained for six or eight months of the year; its usual season of blooming, too, being in winter and spring, renders it all the more valuable. Like many of its allies, this species is a very variable one, more especially in the colour of its flowers, some of which are of the richest crimson-purple, almost as brilliant as stained glass, while many of the forms are pale rose. This plant seeds freely, and it would be worth while to sow seeds from the pale forms of it in hopes of obtaining a variety with pure white flowers, or at least with white sepals and petals. The finest examples of this fine old plant I have ever seen are at Chatsworth, some of which measure fully 4 ft. high and nearly 5 ft. in diameter at the base. When well grown this Dendrobe deserves a place in every collection of early-blooming stove plants for exhibition purposes. Good coloured figures of it may be seen in Lindley's "Sertum Orchidaceæ," t. 3, and in Paxton's "Magazine of Botany," t. 7.

D. Linawianum (Kæmpfer's Japanese Dendrobe).—This free-flowering plant was introduced to our collections in 1824, but it was known and figured by Kæmpfer in 1712. That authority remarks that in Japan, its native country, it is common on the walls and hedges. Its flowers and habit of growth closely resemble those of D. nobile, but the pseudo-bulbs are more erect, of a paler green colour, distinctly flattened, and the fluting on the nodes is more conspicuous than in that species, added to which characteristics the flowers are of a purer pink colour, and not so purple as in D. nobile, nor are the dark blotches of the lip so distinctly marked. Mr. Dominy raised seedlings of this plant some years ago crossed with D. nobile, but they resembled the seed parent very closely, and were, I believe, never distributed; Messrs. Veitch, however, still possess these seedlings, and they are interesting as the first seedling Dendrobes ever raised in this country or, in fact, in Europe. The plant is of the easiest culture, indeed, it is often grown by florists in a warm greenhouse or pit along with its ally, D. nobile, mainly for its supplies of cut flowers during winter and spring. A few plants of it should be grown in every plant stove or warm vinery wherever cut flowers are in demand. It grows best in a pot of peat and Sphagnum, and requires a copious supply of tepid water when growing: like D. nobile, an occasional dose of weak manure-water assists it immensely in forming tall plump pseudo-bulbs. There are two or three distinct varieties of this plant, D. Linawianum majus being the best. It is generally known as D. moniliforme, a name which rightly belongs to the small white-flowered D. japonicum. Coloured figures of it are given in the "Botanical Magazine," t. 4153, and in the "Botanical Register," t. 1314.

D. transparens (Translucent Dendrobe).—This is one of the prettiest little plants belonging to the D. nobile group, the main distinction from the last-named species being its extremely slender habit and smaller flowers. It is a native of India, and grows freely in a warm and humid temperature, producing white lilac-purple-tipped flowers abundantly in April or May. It does best in a small pot of fresh fibrous peat and Sphagnum Moss, and must be copiously watered when making its growth, which it does immediately after flowering. It is tolerably plentiful, and deserves to be grown in quantity as its flowers, being small and more elegant in shape than those of D. nobile, are better adapted for bouquets or button-hole flowers. I have seen it in charming condition in hanging baskets; its flowers are richer in colour thus grown close under the glass than when in a pot on stages further from the light. Good coloured illustrations of this plant may be found in the "Botanical Magazine," t. 4663, and in Paxton's "Flower Garden," t. 27.

D. amœnum (Sweet-scented Dendrobe).—In general habit this closely resembles the last-named plant, but the magenta tips of the ivory white flowers are brighter, and the flowers are deliciously scented, even more so than in the case of D. heterocarpum. It was imported by Mr. W. Bull in 1875, and was much admired when shown at the spring exhibitions of the Royal Botanic Society. It grows freely in a pot, treated in the same way as D. nobile, but it requires a little more heat than that kind. Like D. transparens, its flowers are elegant in outline and well suited for cutting and arranging in bouquets, where their distinct and delicate perfume is always welcome. It deserves a place in every collection, however small. A good figure of it is given in the "Botanical Magazine."

D. tortile (Twisted Dendrobe).—This is a native of Java, and, in order to be successfully grown, it requires a high temperature. Its pseudo-bulbs are smooth, thickened at the nodes, and from 1 ft. to 1½ ft. in length, the flowers being produced in twos and threes from the thickened or swollen nodes. The sepals and petals are whitish and twisted something like those of Trichopilia tortilis, and the rounded lip is of a pale primrose colour. One variety, D. tortile roseum, has the segments suffused with rosy lilac, and is a much more showy and attractive plant of the species. It succeeds best grown in a hanging basket, in peat and Moss, and suspended near the light. Its flowers are produced in profusion in May or later. They are delicately scented. It is not so common as many other species, but well deserves a place in every collection. A good coloured figure of it is given in the "Botanical Magazine," t. 4477.

D. Parishii (Parishi's Dendrobe).—This is a compact-habited species from Moulmein, whence it was sent to our gardens by the Rev. C. Parish about 1862. Its pendent pseudo-bulbs are as thick as the little finger; they are seldom over 1 ft. in length, and are covered with dry silvery membranous sheaths. The flowers are produced in pairs from the nodes of the two-year-old bulbs, and are of a rich crimson-purple, and measure about 2 in. across. The lip is whitish, with a dark stain on both sides of the throat; it grows well in a basket suspended near the light. Mr. Bateman, in alluding to the advent of this showy little species, says:—"It bears a certain resemblance to D. nobile, but is in reality perfectly distinct from that species. Even when out of flower, it is readily distinguished by its thick clumsy leafless stems, which are bent downwards in a stiff ungainly manner, while the stems of D. nobile and D. moniliforme hold themselves erect, and taper gracefully towards the base." When growing, it requires plenty of heat and copious supplies of moisture at the root. A good figure of it is given in the "Botanical Magazine," t. 5488.

D. lituiflorum (Trumpet-lipped Dendrobe).—When well grown, this is one of the most attractive of all the pendulous-habited Dendrobes, bearing often from twenty to thirty large rich purple and white flowers, on slender leafless bulbs, a yard or more in length. A plant of this species, shown at South Kensington on March 15 of this year, bore forty-three large and highly-coloured flowers on two pseudo-bulbs, considerably over a yard in length. It came from the collection of Sir H. Peek, at Wimbledon House, and was much admired. It grows best in a basket suspended near the light, and, like all Indian Dendrobes, requires an abundant supply of water when making its growth in June and July. It grows so freely, and is withal so extremely beautiful, that no collection of Orchids can be said to be complete without it. Its flowers at first sight remind one of those of a dark variety of D. nobile, but the lip is longer and whiter, and the sepals and petals are of a richer violet-purple tint, to say nothing of the distinct drooping habit of the plant. Good figures of it are given in the "Botanical Magazine," t. 6050; and in Warner's "Select Orchids," (second series, t. 3).

D. Macarthiæ (Mrs. Macarthy's Dendrobe).—This is one of the most beautiful and, at the same time, one of the most rare of all Cingalese Orchids, and it is also totally distinct from any other known species. Its pseudo-bulbs are long, slender, and pendulous, and have swollen dark-coloured joints, the internodes of which are covered with pale membranous sheaths; indeed, in habit this plant and the golden-flowered D. Hookeri are nearly identical, although its flowers are distinct. They are produced in fascicles of two or three together, and are about 3 in. in length, of a bright rosy colour, the lip being white with purple markings; the sepals and petals do not expand, as in the case of all the other species, and the bottom of the flower is quite flat. It succeeds best on a block or in a basket, and well-managed specimens of it bear from fifty to one hundred flowers fully expanded at the same time. In its native habitat (Ceylon) it is found hanging from the tallest forest trees in the most inaccessible parts of the island, and is known as the "Rainy Month" or "May-flower." It requires a moist warm atmosphere, especially when making its growth, and is so distinct and beautiful that it deserves a place in the most select collection. A coloured figure of it is given in the "Botanical Magazine," t. 4886.

III.—The D. chrysotis Section.

Pseudo-bulbs drooping; flowers in few or many-flowered racemes; sepals and petals, yellow; lip, yellow, its margin much fringed.

D. chrysotis (Dr. Hooker's Dendrobe).—This is by far the finest of all the pendent-habited, yellow-blossomed species, and well deserves attention. A few years ago a plant of it in the Manley Hall collection produced twenty-five spikes, on some of which there were nine flowers, and the individual blooms measured considerably over 3 in. across. The sepals and petals of this species are of good substance, and of a deep golden-yellow colour, the rounded lip being also yellow and finely cut into long eyelash-like fringes, the effect being considerably enhanced by a pair of vivid crimson blotches, one on either side of the disc. This plant was first discovered by Dr. Hooker in Sikkim in 1848, and has been figured in the "Botanical Magazine" as D. Hookerianum, a name under which it is sometimes found in gardens and trade collections. In its native habitat it seeds freely and there are two distinct varieties of it in cultivation. It has been erroneously stated to be only a form of the old and well-known D. fimbriatum oculatum, from which, however, it is quite distinct. It produces flowers on the slender and pendulous growth of the current year, the nodes being dark and shining, and somewhat thickened or swollen. A plant of it in Mr. Heriot's collection has pseudo-bulbs nearly 5 ft. in length, and has borne flowers in profusion. Its blossoms last six or eight days in beauty. Coloured figures of it are given in the "Florist," 1871, p. 145, and also in the "Botanical Magazine."

D. Cambridgeanum (Dwarf Golden Dendrobe).—This is a showy species from northern India, of dwarf habit, having short thick green pseudo-bulbs, which fall over the edges of the pot or basket like those of D. Parishii. It is a plant which grows well enough in a warm humid temperature, but to bloom it well it must have a liberal allowance of sunshine. A block, or a small hanging basket of peat and Sphagnum suits it best, and it requires a copious supply of tepid water at the root, especially when growing. Several specimens of it are now in bloom in Messrs. Veitch's collection at Chelsea. The individual flowers are about 3 in. in diameter, the sepals and petals being of a rich orange or golden yellow colour, the rounded fringed lip bearing a conspicuous crimson blotch on the disc. When well grown this is one of the most effective of all the yellow-flowered Dendrobes belonging to this section, and its dwarf and compact habit is an additional advantage where space is limited. Good coloured illustrations of it are given in Paxton's "Magazine of Botany," vol. vi., t. 265; and also in the "Botanical Magazine," t. 4450.

D. chrysanthum (Crimson-golden Dendrobe).—A well-known Indian species, of robust habit, the pseudo-bulbs of which, in the case of liberally-treated specimens, often measure from 4 to 6 ft. in length, and, when well-ripened, form perfect wreaths of thick, waxlike, golden flowers, which last two or three weeks in perfection. When well-grown few plants are more useful than this Dendrobe for furnishing cut bloom or for conservatory decoration. It likes a rich compost consisting of peat, living Sphagnum, nodules of charcoal, and a few handfuls of dried horse-droppings, all well intermixed, and, like D. nobile and one or two other strong-growing kinds, a little manure-water given twice a week will be found of service to it when in active growth. Its flowers are borne in fascicles of from two to seven at the nodes of the current year's growth. The yellow sepals and petals are short, thick, and rounded, of a glossy character, the lip being rounded, slightly fringed, and of a golden-yellow colour blotched with reddish-crimson. A good coloured figure of it may be seen in the "Botanical Register," t. 1299.

FLORAL DECORATIONS FOR APRIL.

The flowers available through April do not materially differ from those to be had in March; though they may now be obtained in larger quantities and at lower prices, owing to many of them being in bloom in the open air, which previously were under glass. At the same time there are some, which, though in blossom at the beginning of the month, will be all over long before the end of it, if they be not kept back by continued dull weather, and to these a query (?) will be found appended. The list of blue flowers (at all times a short one) is increased by the addition of Nemophila (forced), and by Forget-me-not and Venus' Navelwort from the borders, the latter (Omphalodes verna) having the purest blue colour of any flower yet mentioned, while the Siberian Squill presents the darkest shade of pure blue. The two-leaved Squill is a welcome addition to the list of purple flowers, and there are other species of Scilla which might here be enumerated, but that they are not commonly grown to such an extent as to be available for cutting. In old gardens may now be found large clumps of the pink Dog's-tooth Violet (Erythronium), a lovely little liliaceous plant which does not like its roots disturbed by digging, and which is consequently never seen after the first year, where "jobbing gardeners" are employed. The buds of forced Roses appear to me to be of purer and better colours this spring than heretofore in the shops of the London florists, and, considering the unusual backwardness of the season and the absence of sun-light, it is difficult to account for this, while it is at the same time highly creditable to the growers. Covent Garden Market is indebted to Mr. Bennett, a nurseryman in Wiltshire, for a good supply of buds of two new Roses of small size, with good form and colours. The yellow one (Perle du Jardin) to which I refer, is a seedling from Gloire de Dijon, and is like a small Maréchal Niel, or a portly edition of Isabella Sprunt. The other Rose is a rich orange, about half the size of Madame Falcot, but with much richer colour and better form, while, for fragrance, there are very few Roses to match it, the scent resembling a blend of Violets and Apricots; it is a seedling from Vicomtesse de Cazes, and, as a button-hole Rose, stands in my estimation "at the top of the tree." It is called Madame François Janin.

Blue—Cineraria, Hepatica (?) Hyacinth, Myosotis, Nemophila, Omphalodes, Siberian Squill.

Purple—Cineraria, Crocus, Heliotrope, Hyacinth, Two-leaved Squill, Tulip, Violets.

Mauve—Cineraria, Heath, Primrose, Tulip.

Pink—Almond, Azalea, Begonia, Bouvardia, Camellia, Carnation, Chinese Primrose, Cyclamen, Dielytra, Dog's-tooth Violet, Fancy Pelargonium, Fuchsia, Heath, Hyacinth, Ribes, Rose, Tulip, Zonal Pelargonium.

Crimson—Bouvardia, Camellia, Cyclamen, Cydonia (Pyrus) Japonica, Fuchsia, Hyacinth, Polyanthus, Primrose, Ribes, Rose.

Scarlet—Bouvardia, Carnation, Euphorbia (?), Salvia (?), Tropæolum, Tulip, Zonal Pelargonium. Also berries of Aucuba, Cotoneaster, and Solanum.

Orange—Carnation, Crocus, Narcissus, Polyanthus, Rose, Tulip.

Yellow—Azalea, Coronilla, Genista, Hyacinth, Lachenalia, Narcissus, Polyanthus, Primrose, Rose, Tulip.

White—Andromeda, Arum, Azalea, Begonia, Bouvardia, Camellia, Carnation, Chinese Primrose, Crocus, Cyclamen, Eucharis, Heath, Hyacinth, Laurustinus, Lilac, Lily of the Valley, Narcissus, Paper Narcissus (?), Pink, Roman Hyacinth (?), Snowy Medlar, Spiræa, Tulip.

—W. T. T.

ANTHURIUMS AND THEIR CULTURE.

Of these, four especially deserve a place in even the most select collection of stove plants; but as they require somewhat different treatment as regards soil, it will be necessary to speak of them separately. First, therefore, let us take the white-spathed kind, A. candidum, a Columbian plant of somewhat slender habit, with rather small, erect, ovate, lanceolate leaves, on proportionate foot-stalks; its spathes are about 3½ in. in length. It associates well with A. floribundum, a New Grenada species, with much broader, slightly lanceolate leaves, dark green, and of compact habit; the spathes of this plant are also white; it lasts long in flower. Both may be increased by division of the crowns taken off in the spring when they have made a few roots from the base. That these exist before the crowns are separated from the parent plant is essential, as if taken off before they have formed roots independent of the plant that has produced them, they will be long in growing away freely. When taken off, place them singly in pots no larger than the roots can be got into without injury. They are surface-rooters, requiring an abundance of water; consequently they do not need a great depth of soil, but they must have plenty of drainage material, which should half-fill the pots; the soil should consist of fibrous peat, three parts to one of flaky rotten manure that has been well dried. Mulching that has lain exposed on the surface of a Vine border or an Asparagus bed is the best for Anthuriums: add to these a fifth part of leaf-mould, a good sprinkling of crocks broken the size of Horse Beans, and a fair quantity of silver sand, mixing the whole well together. Do not, even whilst the plants are small, sift the soil, but pull it to pieces with the hand; press moderately firm, and put the crowns an inch or so down, just covering the roots a little; put a small stick to each for support, give water, and place them in a brisk heat of 65° or 70° at night, increasing it during the day. Keep them a little close until they begin to grow, but not so much so as would be requisite in the case of ordinary cuttings. Raise the temperature both day and night as the season advances, giving air in the day time when the weather is such as to require it, and shading slightly when the sun is upon them. When a fair amount of roots has been formed, the plants should be moved into pots 2 in. larger, using similar soil to that in which they were last placed. Continue to treat them through the summer as already recommended, syringing them freely every afternoon, and also giving plenty of water to the roots. Reduce the temperature and discontinue shading as the weather gets cooler, keeping them through the winter in a temperature of from 55° to 60° at night; but do not let the soil get dry. Re-pot in April, giving 2 or 3 in. of a shift, still half-filling the pots with drainage, and using the soil in a more lumpy state as the plants get larger; this season they will push up flowers from all the strongest leaves; but it will not be advisable, even whilst in bloom, to move them out of the stove, as a lower and drier atmosphere would interfere with their growth. Continue the summer and winter treatment in this and subsequent years, as already recommended, giving more pot room when it is wanted. They will go on for years increasing in size as long as required, and when they get larger than desirable, they may be reduced by division of the crowns. They may be increased by means of pieces of their rhizome-like stems cut into portions 1 or 2 in. in length, inserted in soil such as that recommended for potting the crowns in, and treated similarly afterwards. They may likewise be raised from seeds managed as hereafter recorded, as regards the propagation of A. Scherzerianum and its white variety.

A. Scherzerianum, which is now well known, is undoubtedly one of the very finest flowering plants ever introduced to this country. By judicious treatment it has been grown to a size never anticipated when we first became acquainted with it. It is from Costa Rica, and can be readily increased from seeds. For a considerable time after it was brought to this country few succeeded in seeding it simply through not allowing time for the seed to get matured; they are borne on the outside of the spadix in compressed globular, pulpy masses, about the size of, and when ripe the colour of, pale Red Currants. To produce good seed, flowers should be selected that open towards the close of the summer; about August, when the spathes decay they may be cut off, leaving the twisted spadix growing upon the peduncles. These will remain through the winter in much the same condition; in autumn they appear quite brown, with little apparent vitality in them, but in spring the spadix will all, or partially, untwist, and the seed-vessels will begin to swell, keeping at first green, after which they gradually change to an orange-red as they ripen. When fit to gather they are almost transparent, and will part readily from the spadix. They should then be removed, washed out of the pulp in which they are embedded in the way usual with Melon or Cucumber seeds, and ought to be at once sown. Procure large-sized pans, and place in them an inch of drainage; then get some clean Sphagnum Moss, free from Grass or weeds, and cut it quite fine with a pair of scissors or hedge shears; then add to it one-fifth of clean sand and some crocks or charcoal, broken about the size of small Peas; fill up the pans with this mixture, pressing it firmly down, and water the surface, sprinkling a little more sand if that which has been already mixed with the Moss is washed down; damp the surface again, and sow the seeds thickly and evenly over it, pressing them gently down with the hand, but not covering them in any way; put a propagating glass over the whole to keep in the moisture, which will prevent the necessity for giving much water, as, if this be required in considerable quantities, it has a tendency to wash the seeds into the material, which must not occur, as they vegetate best on the surface. Keep the whole quite moist; it must never be allowed to become dry, but, when water is given, let it be applied through a fine rose, so as not to disturb the seeds at all. Place them in a night temperature of 65°, allowing 10° more in the day time; in a few weeks they will begin to grow, and as soon as the young plants are large enough to handle, prick them off into 3 in. pots, half-filled with drainage, in similar material to that in which the seeds were sown; put them an inch apart, and keep the compost well moistened, for the Anthurium is a semi-aquatic, and cannot endure to be dry at the roots. Let the young plants, from the time they first vegetate, have plenty of light, but do not allow the sun when at all powerful to come upon them without shading; give air in the middle of the day, and syringe overhead in the afternoons; when they have made a couple of leaves an inch long, move them singly into thumb pots, still using the Sphagnum and sand mixture. By the end of August the most vigorous should be moved into pots a size larger, now mixing a little fibrous peat with the Moss, sand, and small crocks. The least plants had better remain undisturbed until the following spring. Keep them through the winter in a night temperature of 55° or 60°, and a few degrees warmer during the day. This is considerably hotter than is requisite for them when they get larger; but the object now is to push them on without loss of time. Place them where they will be fully exposed to light, and damp them overhead every day with the syringe. By the beginning of March all will want moving to larger pots; but do not give too much root-room, or the soil will get sour, in which case the roots are sure to perish. Increase the temperature, give air and shade as the days lengthen, similarly to the preceding season. About the end of June most of the plants will need a size larger pots, adding now a little more peat to the Moss. Any that attempt to bloom this season should have their flowers pinched out as soon as they appear, for, if flowering be allowed to go on, it will seriously retard their growth. Treat them through the autumn and winter as before. Again pot them in the spring, now and subsequently using half good fibrous peat with the Sphagnum, sand, and crocks. This summer they may be allowed to open a few flowers. Most of the blooms will differ more or less in size, shape, and depth of colour, and they should be removed before seeds are formed, as that would stop their progress. Those that have the largest and best formed flowers should be marked, and have especial encouragement. As they grow up into a useful decorative size, they may be kept at 50° at night during the winter season, at which they should not have so much water, but still enough to keep them growing. They will make the strongest leaves in the winter; through the spring and summer let the night temperature be 10° or 15° higher, and proportionately warmer in the day time. They will go on making larger leaves and flowering until they get five or six years old, as well as forming numbers of crowns, increasing the bulk of the plants for an indefinite time, provided the soil is never allowed to become sour and adhesive, in which case the roots are sure to perish. To avoid this, each year when re-potted, get as much of the old exhausted material away as can be done without injuring the roots. The best time to re-pot them is in summer, after the principal blooming is over; this will depend upon the temperature in which they are kept during early spring, as the warmer they are the earlier they throw up the main crop of flowers. The white form of A. Scherzerianum requires treating in every way like the red variety. Both can be increased by division of the crowns, and by pieces of the rhizome in the manner described for A. candidum and A. floribundum.

Thrips and green fly are both partial to the leaves and flowers of Anthuriums, but the continuous syringing recommended is generally sufficient to keep them in check, otherwise they may be killed by fumigation. Brown scale thrives upon the leaves, and must be kept under by sponging, as likewise mealy bug, should they become affected with it. T. Baines.

Camellias Dropping their Buds.—A correspondent of the "Gardener," says, he has good reason to believe that Camellias drop their buds from being over-excited with heat, or any treatment which tends to produce leaf or foliage growth before the buds are fully and firmly grown—the plant will not at the same time develop its flower-buds and produce its new leaves; *ergo*, the plant must be kept in the cold, even to the extent of some degrees of frost, before any encouragement should be given to the development of its flowers.

Dwarf Fan Palms for House Decoration.—In The Garden for April 1st, it is stated that gas and violent draughts of cold are destructive to all plants in a dwelling-house. From this rule there is certainly one exception—the different varieties of Chamærops, which we have kept in good health and appearance for years in succession in the worst possible positions, both as regards light, heat, and draughts. Where these will not live and keep in fair health, the growing of plants may be given up, and a stock should be obtained of the cast-iron Aloes which are used to decorate some gardens. It is probable that these, if painted regularly, would not lose their foliage very readily; but the Palms in question are nearly as easy to keep, and want but little more attention. They are perfectly hardy here, standing outside all winter without any protection; in fact, they have the constitution of the cast-iron works of art before referred to, with the advantage of growing and changing their form every year, which the cast-iron variety of Aloe has not, and they have also the advantage of being less costly. When all other things fail, I should advise a trial of these Palms, and if they do not succeed plant-growing may safely be given up as hopeless.—Thos. Fletcher, *Warrington.*

Centranthus Lucianus.—This rare plant is the admiration of all who see it. It is in flower more or less for the greater part of the year, but is in its fullest perfection during the four or five months of winter, when it blooms most abundantly in a hothouse. The flowers are long and numerous, of a rich red, and are disposed in a kind of umbel, last a long time, and succeed each other continuously. MM. Rougier, Chauvière, Thibaut, and Keteleer are the principal cultivators of this beautiful flower, which, although its culture and propagation present no difficulties, is nevertheless rarely met with in hothouses.—"Revue Horticole."

Gesnera Houtteana coccinea.—This plant was raised some years ago in the Wellington Road Nurseries, in which it is now in bloom, and it is certainly one of the most distinct of its class. It has thick woody root-stocks, from which its soft hairy stems rise to a height of 18 in. clothed with velvety cordate leaves, and terminated by axillary clusters of hairy tubular flowers, nearly 3 in. long. These flowers are of the most vivid scarlet colour imaginable, so brilliant indeed, that by the side of them many other so-called scarlet flowers look, comparatively speaking, brick-red. White fresh green Ferns and white-flowered Gardenias, Deutzias, Hyacinths, and Narcissus, look whiter still by being associated with them. Like others of the section to which it belongs, the plant can be stowed away during the autumn and winter months, and started again early in spring, when its brilliant flowers and velvety leaves are required for decorative purposes.—B.

Citrus trifoliata as a Stock for Oranges.—This spinose species of the Orange family has proved thoroughly hardy in Messrs. Henderson's Nursery at St. John's Wood, planted out in a deep rich border, and trained on a sunny wall. It is the Limonia trifoliata of some gardens, and is principally used as a stock on which to graft the more choice and tender varieties of Oranges, and more especially for the delicious little Citrus japonica, or Kumquat, which indeed can scarcely be induced to perfect its egg-like fruits in cultivation unless worked on this species. The only place with which we are acquainted where this deliciously-flavoured and ornate little Orange is successfully grown is at Knypersley Hall, Cheshire; but if worked on the above-named stock, there can be no difficulty in growing and fruiting it elsewhere in a warm greenhouse or plant stove.—B.

Floating Island in an Aquarium.—I have the pleasure of giving particulars (says a correspondent of "Science Gossip") of a pretty appendage to the aquarium, namely, a floating flower-garden, which has been in operation about a month. I procured a piece of rough "virgin cork" (such as used for ferneries, rustic work, also by photographers), about 9 in. long by 5 in. broad, the thicker the more buoyant, floated it to observe its position, then, from the highest ground, bored two holes about an inch or so in diameter, and a little distance apart, over which I placed two Hyacinth bulbs; the roots soon reached the water. From the present healthy appearance of the leaves I have every hope of the success of my scheme. The fish appear pleased with the addition, and have availed themselves of the shade offered by the floating garden.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Passiflora princeps.—This, when fully established, is nearly always in flower—not one or two blooms, but long wreaths or racemes sufficient in themselves to brighten up any structure, and when planted out in a well prepared border few stove plants are less liable to insect plagues.—J. Groom, *Henham.*

Cytisus filipes for the Greenhouse.—I find this as effective and graceful in my small conservatory as the Weeping Willow is in the open garden, only that my delicate weeping Broom bears many pure white flowers. I got my plants from Messrs. Osborn, of Fulham, who, I believe, graft them on the common Laburnum.—L. L.

Caltha leptosepala.—This pretty plant (says "The Gardener") is suitable for planting in moist positions. It grows somewhat in the style of, and about the same height as, Ficaria ranunculoides, but with considerably larger pure white flowers internally, externally shaded with yellow. It is a native of the Rocky Mountains.

The Small Creeping Fig (Ficus minima).—This delicate-looking little plant, a miniature of Ficus repens, is valuable for covering walls with a smooth coat of green leaves. There is a wall well covered with it in one of the houses in the Royal Exotic Nursery at Chelsea. Its slender habit, as compared with that of the larger kind, makes it valuable as a creeper on the surface of pots, and for tree Fern and other stems.

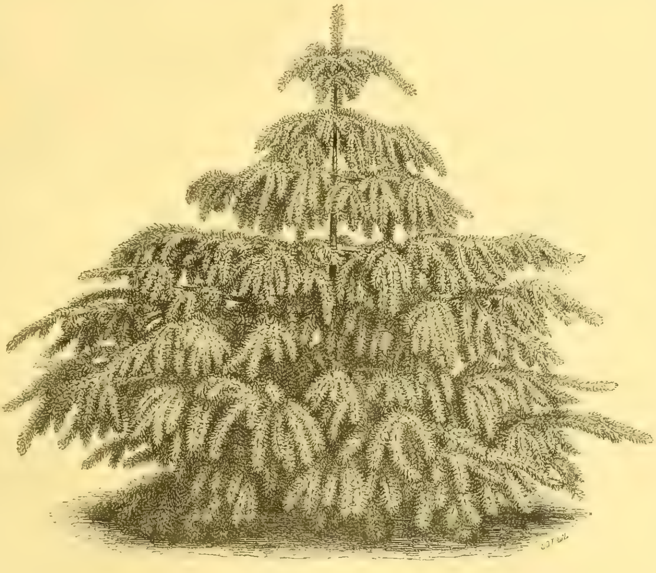
TREES AND SHRUBS.

THE DOVASTON YEW.

THE following, quoted from Loudon's "Arboretum Britannicum," is the correct history of Taxus baccata Dovastoniana, or Dovaston Yew. "The Westfelton Yew stands in the grounds of J. T. M. Dovaston, Esq., at Westfelton, near Shrewsbury, and the following account has been sent us by that gentleman:—About sixty years ago (now 100), my father, John Dovaston, a man without education, but of unwearied industry and ingenuity, had with his own hands sunk a well, and constructed and placed a pump in it; and the soil being light and sandy, it continually fell in. He secured it with wooden boards, but perceiving their speedy decay, he planted near to the well a Yew tree, which he bought of a cobbler for 6d., rightly judging that the fibrous matting tendency of the Yew roots would hold up the soil. They did so, and, independently of its utility, the Yew grew into a tree of the most extraordinary and striking beauty, spreading horizontally all round to the diameter of (now 1836) 56 feet, with a single aspiring leader to a great height, each branch in every direction dangling in tressy verdure downwards, the lower ones to the very ground, pendulous and playful as the most graceful Birch or Weeping Willow, and visibly obedient to the feeblest breath of summer air. Its foliage is admirably adapted for retaining the dewdrops; and, in consequence, it makes a splendid appearance at sunrise. Though a male tree, it has one entire branch self-productive, and exuberantly profuse in berries, full, rich, red, and luscious, from which I have raised several plants, in the hope that they may inherit some of the beauty of their parent. The circumference of the tree, now at 5 ft. from the ground, is 5 ft. 1 in.; and it is in a growing state quite healthy and vigorous. I have just been favoured with a letter from the present proprietor of Westfelton, giving the present dimensions of the Dovaston Yew. In 1836 the diameter of its branches was 56 ft., and this year it is 72 ft.; circumference of trunk, at 5 ft. from the ground, in 1836, 5 ft. 1 in.; the same in 1876, 7 ft. 6 in.; present height, 34 ft. One of the pendent branchlets, kindly sent me by Mr. Dovaston, measures 2 ft. 3 in. from its junction with the branch. The accompanying illustration, though it hardly does the tree justice, will give some idea of its beauty. I have a fine golden form of it about 3 ft. high, very graceful. Mr. Dovaston informs me that seedling plants from this tree partake of the same pendent character as that of the parent.

WILLIAM BARRON.

Elvaston Nurseries, Borrowash.



The Dovaston Yew.

Clematis Ligusticifolia.—This is a remarkably strong and vigorous growing hardy Clematis, forming a good companion to the well-known C. virginiana of the Eastern States. We ("American Gardener's Monthly") note that it is now being offered in several seedsmen's catalogues.

HORSE CHESTNUTS.

THESE form a small but interesting group of deciduous trees, indigenous to many parts of Asia and North America; they are remarkable for their symmetrical habits of growth, handsome foliage, and showy flowers, which, in large specimens, are produced in great abundance. They are perfectly hardy, and grow freely in almost every kind of soil, but they prefer that which is of a deep, rich, loamy character. Since their introduction, the various sorts, and notably the Asiatic form with its varieties, have been largely planted and with good effect in our parks and woodlands. Though in some instances they attain considerable dimensions, the timber is too soft, and easily acted on by the weather, to be available for other than minor or temporary purposes; and they are therefore rarely or at least sparingly introduced by foresters into plantations from which profitable returns are expected. The undernoted species and varieties are very distinct, and deserve the especial attention of planters for ornament.

Æsculus Hippocastanum (Common Horse Chestnut).—This is indigenous to the north of India and to various other of the temperate regions of Asia; it grows to heights of from 50 ft. to 70 ft., and, in exceptionally favourable circumstances, even to 100 ft. It is reported having been in cultivation as an ornamental tree in southern and central Europe for more than 300 years, and the date given for its introduction to Britain is 1629. When planted in a park, and allowed to branch out on every side without interruption, it forms a surpassingly handsome tree, with a broadly pyramidal and regular outline. The branches are long and numerous; the bark of a pale brown colour; and the large, prominent leaf-buds thickly coated with a dark gummy or resinous substance, which becomes glutinous in early spring, and gives the tree an interesting appearance. The leaves are large, palmated, usually with seven leaflets, the two lower ones much smaller than the others; they are of a light green tint when developing in April and May, becoming darker when matured. The flowers, which expand shortly after the leaves, are white, spotted with delicate pink and yellow. They are disposed in large, erect, Hyacinth-like spikes, from the points of the young shoots. The fruit capsules are prickly, and contain from one to three nuts, which are ripe in September or October. They are so bitter as to be useless as food; but it is said that "that quality can be extracted by chemical processes, and then, when the kernel is ground and mixed with wheat-flour for bread, it is agreeable to the taste, and very nutritious." For massive grandeur of form, graceful foliage, and beautiful flowers, the common Horse Chestnut yields to none of its companions in our pleasure-grounds. It forms a noble characteristic object in the landscape at all seasons of the year, and superlatively so in early summer. It is scarcely necessary to say that it is hardy enough to stand the severest winters in any part of this country; and, though of rapid growth in most soils, comes to the greatest perfection in deep loam, with a dry sub-soil, and in situations sheltered from wind, which injures the young leaves. Of a number of sports and seminal varieties in cultivation, the following are distinct and worthy of introduction into collections of choice trees:—Æ. H. argentea variegata—in this form the leaves are more or less blotched with silvery white; Æ. H. aurea variegata —blotched with yellow in a similar manner to the preceding. Both these variegations are interesting, and when in character very showy; in some soils, however, they are not very constant, and have a tendency to revert to the original green; Æ. H. carnea—the flowers of this variety are pale pink, and very showy; Æ. H. crispum—so named from its leaves being curiously crisped, it forms a pretty, distinct-looking specimen tree; Æ. H. flore-pleno alba—flowers semi-double, but otherwise identical with the species; Æ. H. flore-pleno rubra—another semi-double variety, with pale pink or red flowers; Æ. H. incisum—the leaflets of this sort are deeply cut inte shred-like divisions. It is an interesting and very elegant tree, well suited for a prominent situation on a large lawn, or for associating with the taller growing shrubs in mixed collections.

Æ. ohioensis (Ohio Horse Chestnut).—As its name implies, this is one of the American forms of the genus. It was first sent to Britain about 1820, and is reported as occurring not only on the banks of the Ohio, where it was first discovered, but more or less abundantly over several of the States, particularly in Western Pennsylvania and Kentucky. In its native habitats it forms a moderate-sized tree, rarely exceeding 20 ft. in height, and in high exposed situations dwindling down to a bush of about 8 or 10 ft. The leaves are pale green, divided into five leaflets, much smaller than those of the typical species. The flowers, which expand in May, are creamy-white tinted with pink, and are borne in erect spikes from the points of the young shoots. The nuts are enclosed in small prickly capsules, and are usually ripe in October. Though not often met with in our pleasure grounds, this is a beautiful ornamental tree, resembling in general appearance the common Horse Chestnut, but sufficiently distinct to render it very desirable for planting in parks, avenues, or spacious lawns. It requires a deep, rich, and well-drained soil, and succeeds best in situations sheltered from the blast.

Æ. rubicunda (Red-flowered Horse Chestnut).—This species —or variety, for a great diversity of opinion prevails among botanical writers as to its claims to rank as a species, some regarding it as a hybrid or sport from Hippocastanum—is recorded as having been introduced from North America in 1820. In general appearance it resembles the common Horse Chestnut, but is less robust in habit of growth, and rarely exceeds 30 ft. in height. The leaves are similar to those of that species; and the flowers, which even on comparatively young specimens are produced in great profusion, differ only in being of a deep pink or rose colour. It is, moreover, easily distinguished in winter by its lighter-coloured bark, and the almost entire absence of that gummy secretion which forms such a prominent feature on the buds of the common sort. It succeeds perfectly under the same conditions which are necessary for the well-being of its congeners, and is, beyond question, one of the grandest of our hardy flowering trees, suitable from its neat bushy habit, handsome foliage, and gorgeous flowers, for planting on a lawn as a specimen tree, or for grouping among evergreens and other flowering shrubs, small trees in borders, or clumps, in the best kept grounds. Æ. r. coccinea.—This is a variety with flowers of a deeper red colour than the parent. It is a distinct and very beautiful tree. —"The Gardener."

THE DOGWOODS.

Tree planters in search of novelties need not look far from home to find many really good things, especially in the way of hardy-flowering shrubs. Among these the Dogwoods hold a conspicuous place, although it is a rare sight to find any of the various species in cultivation, excepting a chance specimen of the common Large Cornel (Cornus florida). This showy plant, or rather small tree, is exceedingly attractive, owing to the large white leaves of the involucre, which are generally mistaken for the true flowers; they are merely the floral covering, the true flowers being of a greenish colour, and massed closely together in a head or cluster. The foliage changes to a brilliant crimson in the autumn, and the bright red fruit is very ornamental. A closely allied species to the above, and one that is equally deserving of culture, is known as the Dwarf Cornel (C. canadensis). This, which is really little more than a herbaceous plant, only grows 5 or 6 in. in height, from an underground creeping stem, with mostly four or six roundish pointed leaves, arranged in a whorl, as botanists term it. It is likewise very attractive when in bloom. Other species may be enumerated as follows: Panicled Dogwood (C. paniculata) a kind with pretty white flowers in a panicle, or (as it is called) a cyme; succeeded by pure white fruit. The Round-leaved Dogwood (C. circinata), forms a handsome shrubbery plant with its large roundish woolly leaves, and light blue fruit. The Alternate-leaved Cornel (C. alternifolia) quite frequently makes a small tree of 15 or 20 ft. in height, with greenish striped branches, and dark blue fruit borne on reddish stems. The Kinnikinnik (C. sericca), sometimes called the Silky Cornel, is found growing in low, moist situations, and is easily distinguished by its reddish branchlets, downy leaves, and light blue fruit. The Erect-growing Cornel (C. stricta), is not especially attractive, although worthy of a place in a group. Its branches are red, leaves ovate and smooth, and fruit pale blue. It belongs to the more southern parts of North America. The Red Osier Dogwood (C. stolonifera) appears to advantage in a collection; it has bright reddish-purple shoots, with ovate roughish leaves whitened beneath, and white fruit. It multiplies itself freely by means of suckers produced by numerous underground stems. The Rough-leaved Dogwood (C. asperifolia), unlike most of the genus, grows in dry sandy soil, the brownish coloured branches being covered with a rough pubescence; the leaves are long, pointed, and downy. The most beautiful of the genus is, however, the species found along the Pacific coast, called Nuttall's Dogwood (C. Nuttalli), a kind which forms quite a large tree in favourable localities; it has exceedingly showy, large involucres, followed by very brilliant scarlet fruit borne in dense close clusters. Its leaves are much larger than those of any other species, and the tree always forms a striking object in its native forests. The Cornelian Cherry (C. mas), is always a favourite on account of its bright scarlet fruit. It is a native of Europe. A variegated form of it is in cultivation. The Red-twigged Dogwood (C. sanguinea) is also a European species; it has deep red branches, greenish flowers, and purple bitter fruit. The White-fruited Dogwood (C. alba), known in the nurseries as the Red-twigged Dogwood, has bright scarlet bark on the young branches, and pure white fruit. It is a desirable ornamental shrub.—"Arboriculturist."

The Ailantus.—This, as an ornamental and shade tree, has of late years fallen into disrepute on account of the offensive effluvium of its male blossoms; its planting in Washington has been forbidden by an Act of Congress—at least an appropriation for the district of Columbia, made some years ago, was granted upon the condition that no Ailantus trees should thereafter be planted in the city of Washington. The tree is, however, one of great value as a timber tree. It is one of the largest trees known, being said to attain a height of 300 ft. in China. Little attention has been directed to its medicinal virtues; but, according to Dr. Robert, of the French naval fleet in the waters of China and Japan, the bark of the root, in the form of a powder, is more efficient in the treatment of dysentery than ipecac, calomel, astringents, or opiates.

Shelter for Wellingtonias.—Although the Wellingtonia withstands the severest frosts with which we are visited, it is greatly benefited by shelter from the full force of the wind. We have many specimens planted in both sheltered and exposed situations, and while the former retain a fresh verdant green the whole season, the exposed ones have a seared and rusty appearance in spring, which, if not the result of permanent injury to the trees, is undeniable proof of their growth being checked, as the sheltered ones soon surpass the others in height. But, in providing shelter, great care must be exercised that it is not overdone, or the trees will become drawn up and weakly, and the side-shoots thin and wanting in vigour. The most perfect specimens that I have yet seen have been growing on soil rather poor than rich, which is doubtless accounted for by the roots influencing the character of the top growth, as rich soil and rapid growth induce a somewhat straggling habit, while poorer soil of a fibry nature produces a corresponding densely furnished habit of growth.—J. Groom.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Weeping Chinese Cherry.—This (in nursery nomenclature Cerasus pendula fl. rosea) is a singularly beautiful small weeping tree, with slender drooping branches clad with delicate rosy flowers. There is a specimen in the Exotic Nursery, Tooting. There are also good specimens of the large-flowered Almond (?) (Amygdalus macrocarpa), which, from its very large and firm flowers, deserves a place in every collection of early-blooming trees.

Sweet Acorns.—I have met with two Oak trees, one in Windsor Great Park and the other in Richmond Park, the Acorns of which, when perfectly ripe, are quite as sweet as Filberts, and I am persuaded that few people would know the difference. The Acorns are small and rather long, and the foliage of the tree very unlike that of any other Oak. I am not aware (says Mr. Jesse, in his "Scenes and Occupations of Country Life") that this variety has been noticed by any writers on trees.

Flowers of Choisya ternata a Substitute for Orange Blossom.—This trifoliate evergreen Mexican shrub, of which an example may be seen trained on a south wall in the Wellington Road Nurseries, is perfectly hardy in sheltered situations near London. It is nearly allied to the Rue family, and bears panicles of white flowers, in general appearance not unlike Orange blossoms, for which, when the plant is forced, they may some day form a substitute. Continental nurserymen use its flowers largely in a cut state for decorative purposes, and we see no reason why the plant should be less valuable for forcing than Deutzias, Daphnes, and shrubs of a similar kind.—B.

RAISING MYRSIPHYLLUM FROM SEED.

THIS interesting plant, commonly known as Smilax, from the Cape of Good Hope, is, according to the "Gardener's Monthly," now largely used in American cities for indoor decoration and also as a green for bouquets. It is easily raised from seeds, which should be sown in boxes of light but rich soil in August, and placed in a close shaded greenhouse. Of seed sown in two boxes, one that we placed in a close house germinated well, while that in the other, put in a hot-bed in which the heat was 95°, remained for eight weeks, and only five or six of the seeds germinated. Thinking the greater part of the seed had decayed, the box was taken out of the hot-bed and placed along with the first box, when in less than a week every seed germinated and grew at a rapid rate, soon outstripping that in the first box. When plants thus raised are large enough, they should at once be potted off in 2-in. pots, placed in a warm house, and kept growing until early spring, when they require rest; for, it must be remembered, that they belong to the Lily family; after gradually drying them off, place them under the bench, turning the pots on their sides. About the first of August they will begin to show life by throwing up long slender shoots, of a pale purple colour, looking somewhat like Asparagus. At this stage they want planting out or potting; if they are desired for cutting, by all means plant them out, as they are great feeders, and want plenty of room and plenty of water to bring them to perfection. Plant them in soil composed of two parts rich manure, two parts good loam, one part old turf, and one part sand; give plenty of water, never allowing them to become dry; their two greatest enemies are drought and red spider, either of which causes them to drop their leaves, and then they are worthless. Each plant will throw up six or eight shoots, and will need strings to hold them up; twine three or four shoots to one string, and when they have grown to the height of 5 or 6 ft. they are ready for market, each string being worth at wholesale about a shilling. After all are cut, dry them off gradually, and give them a slight top-dressing of manure. Each following year they will increase in value, throwing up more and stronger shoots. While growing, they should be often syringed, and occasionally watered with weak liquid manure. The second winter they will flower and produce seed. The flowers are greenish-white and, though small, very fragrant. The fruit is a berry, which grows to the size of an English Pea, and when ripe—in August—is a light red colour, containing three or four seeds, which are hard and black.

Sprays of Myrsiphyllum.

Aucubas as House Plants.—These are probably the most useful of all shrubs for rooms, corridors, &c. A group in Mr. Parker's house at Tooting, standing in a large window, has grown for three years without a check, and set and coloured their fruit freely, the flowers being fertilised by a small male plant placed on a shelf near. The fine and now greatly varied foliage of the Aucubas, and their easy culture, should make them very attractive for houses in towns.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Bedding Plants.—Where any deficiency yet exists of soft easily propagated plants, such as Heliotropes, Verbenas, Fuchsias, or Ageratums, more of these should at once be put in, the free-growing tops of the earliest struck cuttings that have been already boxed or potted off will strike readily, and if well attended to make better plants by the time for bedding-out than weaker cuttings that were put in earlier. Amateurs who have at command a plentiful supply of leaf-mould should mix it in the proportion of one-third to two-thirds of loam, in which compost they should pot their newly-struck bedding plants; but should there be a scarcity of leaf-mould, thoroughly decomposed manure, such as old hot-bed material, is the next best substitute. Any bedding plants that do not grow freely will be much benefited by manure-water, as filling the beds early in the season, and making a lengthened display, will materially depend upon their not being in a stunted condition at the time of planting out. Where fresh horse-manure is continually procurable, it will be ample for making manure-water; such not being available, amateurs will find nothing better than good guano, used at the rate of a dessert-spoonful to a gallon of water; if as much be made at a time as will last for a week, and a handful or two of soot be added to it at the time, it will be found much better than preparing it as it may be required; by letting the mixture stand for a few days, any offensive smell will be so reduced that it may be used to plants in rooms without any inconvenience. Its beneficial effects will surprise those who have not tried it, especially upon room-plants that have not had their soil renewed for a year or two. By its use Pelargoniums of all kinds, Hydrangeas, Fuchsias, Campanulas, Vallotas, Ferns, Lycopodiums, Palms, and similar subjects suitable for room cultivation, and which, if well attended to, may be kept in a healthy condition for years, instead of being thrown away after a short time; this is especially in the case of flowering plants, for which an annual shaking out and a replacement of fresh soil are frequently thought indispensable; whereas, if they were regularly supplied with manure-water from the commencement of their growth in the spring, they might generally be induced to flourish for two or three years, but little inferior to what they would in new soil; but, to make the system work successfully, the manure-water must be given as early in the spring as the plants commence growth, in order to supply food to the young roots as soon as these begin to form. Although it is advisable to gradually inure all bedding plants to the full influence of the open air before planting out, to prevent too sudden a check to their growth, and it is necessary to begin with the hardiest first, yet care should be taken that in this hardening process the plants are not subject to dry parching winds, and, above all, that they are not allowed to get too dry at the roots, which is the most likely to occur if they are in little pots; where this latter is the case, the pots should be plunged in ashes, or in many cases it is better to turn them out of the pots altogether, putting for that purpose in the pits and frames 4 in. or 5 in. of light soil, from which they can be taken up without much injury to the roots. Dahlia shoots should still, as they get large enough, be taken off and struck; these will succeed best singly in small pots. Where there is a deficiency of glazed lights to put those bedding plants under that are being hardened off, they may be covered at night and during cold wintry weather with thin canvas tacked to light frames, which can be taken off altogether on fine days.

Pits and Frames.—With the driving winds, drenching rains, and snows we have had during the last month, it has been more than usually difficult to keep up the requisite heat to Cucumber and Melon beds, which will make but slight progress unless a night temperature of 60° to 65° can be maintained. When the heat gets down to the lowest of the above figures, linings should at once be applied. The best plan after this time in the spring in making hot-beds for the above plants is to put them so that the frames will stand behind each other with about 4 ft. between, of course facing south; so arranged, a lining of fermenting material betwixt them will heat both beds, retaining its heating properties much longer than if exposed to the wind on one side in the usual way; and after this time the sun gets sufficiently high above the horizon to prevent the front frame shading the one behind, as would be the case earlier in the season. I have had eight or ten hot-beds so placed, thereby effecting a great saving in labour and also in hot manure for linings. Some Melons should now be sown to put in frames after the bedding plants are out, as also some more Tomato seed.

Kitchen Garden.—The land will now be in better condition for sowing than hitherto, and advantage should at once be taken to fetch up arrears in both this and planting.

Peas.—More Peas should now be sown. Where suitable stakes are available there is nothing like the tall-growing varieties, not only for the greater quantity of produce they yield, but also for the much longer time each sowing keeps bearing than is the case with the dwarf kinds, especially when they are not sown too thickly, and with enough space between each row. Peas, of whatever kinds, tall or dwarf, should now be sown much thinner in the row than was advisable earlier in the season, when it was necessary to make allowance for the destruction effected by both slugs and birds, as also through the seed rotting, to which it is always more or less liable with the early sowings—in fact, in many wet localities during the present season, early-sown Peas have disappeared almost entirely. Where such is the case, and only a few straggling plants come up, it is better to remove these altogether, and sow entirely afresh, than attempt to mend the rows, as the few that remain of the first sowing will come to maturity before the others, which will make a confusion of the whole.

Broad Beans, Cauliflowers, Cabbages, &c.—More Broad Beans should also be put in, as likewise early Cauliflower, and Veitch's Autumn Giant Cauliflower, autumn and winter-flowering Broccoli, Cottager's Kale, Green-curled Kale, Savoy, and summer Cabbages and Onions; where the ground has not been in condition for sowing before, Seakale, Turnips, Parsnips, Carrots, more Radishes, Lettuce, Spinach, and small salad.

Potato planting, if not completed, should be finished as soon as possible; a piece of ground ought to be chosen for this purpose that has been manured for a preceding crop, or else manure of a light mild nature should be used, such as rotten leaves or decayed vegetable matter from the refuse-heap. If there be a piece of old Strawberry ground that was broken up last summer after bearing and sown with Turnips, this will be most suitable for Potatoes, which will not only grow well amongst the decayed roots of the Strawberries, but will be less likely to suffer from disease than if succeeding a heavily-manured crop, such as Onions or Celery. In a well-managed kitchen garden, where the space will permit, the more Strawberries are grown the better, as they prepare the ground for culinary vegetables better than any other crop that can be grown.

Strawberries.—The ground between the plants should now be well hoed to destroy any annual weeds that are vegetating at the same time; such as Dandelions, or small patches of Couch Grass should be carefully got up by the roots. If one hoeing be not sufficient to kill all, give a second, so as to have the ground perfectly clear before mulching, which may now be done; this most essential operation should be carried out, whatever may be the nature of the soil, either light or heavy. The system that used to be all but general, and still practised by many—laying down straw or short Grass just before the fruit was ripe—is fallacious. The use of clean straw is wasteful, and assists the plants but slightly in a manurial point of view, while Grass is still worse; whereas if a good covering of stable manure that has fermented sufficiently for the straw to become discoloured be applied, it will act as a powerful stimulant that will increase materially the size and weight of the present crop, and will also greatly benefit the plants for another year, particularly in keeping the roots cool and moist through the summer by preventing evaporation; and when mulched with this kind of material about the middle of the present month, the manurial matter has time to get washed into the soil, leaving the littery portion clean for the fruit to lie upon equal to the best new straw. There is not much danger of overdoing the crop with this sort of manure thus applied; the market growers use as much as thirty tons per acre, manuring their Strawberries generally at no other time and in no other way; it also effectually prevents the growth of weeds.

Stoves.

Many of the occupants of the above structures will now require shade of some kind, as the sun is becoming too powerful for such as have thin tender leaves, or object to bright light. When shade is applied thus early, it should only be for a few hours in the hottest part of the day, otherwise the young growth now being formed will become drawn and long-jointed, at the same time lacking that firmness necessary to produce satisfactory results when the period of flowering arrives. The material used to impart the required shade ought to be of the thinnest description, so as to break the sun's rays without obstructing too much of the light, plenty of which is necessary in the case of most plants subjected to strong heat abounding with atmospheric moisture. Tiffany forms a very suitable shade, but where it has to be used on rollers outside the house, the edges require binding with strong tape, or it soon gets rent by the wind. The most lasting material for outside shading is a kind of canvas known in the trade and sold by drapers as "strainer." This is a thin open material that affords plenty of shade, and as the threads composing it are made of the strongest fibre, it stands the tear and wear better than any other with which I am acquainted. Longer days necessitate a marked increase of temperature, but this must in all cases be moderated and regulated by the amount of light at command. Take advantage of sunny days to close early, and damp well down by using the syringe freely over the heads of the plants and other available surfaces, that the moisture may be proportionate to the light and the extra heat applied. In cases where the general collection has to be treated in one house, it will be found necessary to make a separation of those plants that require shade from others that are benefited by a moderate amount of sunshine.

Crotons.—All the different varieties of Crotons require plenty of light to bring out their beautiful leaf markings that render them so very attractive. Light alone can develope these rich colours, and therefore they should be favoured in this respect as much as possible. When their natural colours are fully brought out, there is, perhaps, no more useful or ornamental occupant of the stove. For table decorations, small plants having single stems well clothed with foliage are as attractive as any that can be used for the purpose, especially such long narrow varieties as C. interruptum, Youngii, undulatum, Veitchianum, Weismanni, and others of that class. Plants about 18 in. or 2 ft. high are the best for the purpose. After they attain that height, nip out the top close to the axil of the young leaf, in order that the wounds may heal over and not show. Any buds that start down the stem should be rubbed out as they show themselves, the effect of which will be to force the whole strength of the plant into the limited number of leaves, which will thus be developed to an unusual size, and the plants kept in the same serviceable condition suitable for small vases during several months in succession. The leaves, too, if kept clean and free from spider and other insects, brighten with age, and are thus more effective for decorative purposes. Larger plants, if grown freely now and gradually hardened off, may be used in the height of the summer in warm conservatories where their beauties are sure to be appreciated, as they look all the richer when seen in contrast with less choice subjects. Cuttings of any of these strike readily now if placed in strong bottom-heat, and kept close for a time. They do best taken off with a heel, inserting each cutting separately in a small pot, so that they may be shifted on without any disturbance to the young roots. Any that are pot-bound should at once be moved into pots of a larger size, that their growth may not be impeded, if fine specimens be desired. A free open soil, such as rough turfing loam and peat in about equal proportions, is the best in which to grow Crotons, and, as they require liberal supplies of water during the next few months, they must not be stinted for drainage. See that they are free from insects before they commence growing, as they will be difficult to eradicate without injuring the young leaves. Spider and thrips are the most troublesome, the former of which is often brought about through dryness at the root, but may always be kept in subjection by a free use of the syringe, and the latter by fumigations of Tobacco.

Dracænas are plants that also require plenty of light to develop their colours properly, and should therefore occupy a portion of the house not too much shaded, unless they can afterwards be placed in a better position to finish them off before they are required for decorative purposes. By an occasional watering with manure-water and keeping them constantly moist at the roots, they may be confined to very small pots without suffering in any way from the limited space afforded them. For general decoration plants with single stems are mostly preferred, but, to be effective, they should be clothed with healthy, bright foliage almost down to the surface of the soil. Where any choice varieties have become naked and leggy, the stems should be bound round just below the leaves with some Moss or Sphagnum, which, if kept constantly moist, will soon induce them to emit roots, when the top can be taken off and potted in small pots. Plants so treated are at once ready for table decoration, and are far superior to such as can be propagated and grown in the ordinary way. Young plants generally have their lower leaves small and but indifferently coloured, whereas those on old plants have attained their full size and are then generally perfect in other respects. The beheaded stems can either be left to break again, or they may be divided into 2-in. pieces for cuttings, which, if subjected to brisk heat, will soon start into growth and form useful plants. Dracænas may likewise be increased by taking off pieces of the thick tuberous-looking roots that may generally be found in the ball of the plant, or amongst the crocks. The time of re-potting affords a favourable opportunity for removing any of these for the above purpose, as, with fresh soil, the roots are soon actively at work again, recovering quickly from any slight check they may have received.

Caladiums.—Where the stock of these is likely to be insufficient, any bulbs now started may be divided into as many pieces as there are crowns. By waiting till they break slightly into leaf this may be done without risk, provided they are kept dry for a short time afterwards to give the cut part a chance to heal over. Caladiums delight in a brisk bottom-heat, but when vigorous plants are required for decorative purposes, they should not be subjected to it for some time previously, or they soon flag when removed to more airy quarters. To get the leaves of good substance and develop their natural colours to the fullest extent, plenty of light is necessary, but this must be accompanied by a proportionate amount of moisture, both in the atmosphere and at the roots. If potted in loose open soil, such as rough peat or plenty of decomposed leaves and loam, with proper drainage and the requisite amount of heat afforded them, they can scarcely be overwatered while growth is active.

Cyperus alternifolius variegatus.—Plants of this have a very graceful appearance, either singly for table decoration or when associated with the brilliant-coloured Dracæna Cooperi, groups of which, in combination with the above, are exceedingly effective. The variegated form of the Cyperus is very inconstant, as it soon reverts to the green state, especially if it receive liberal treatment inducing free growth. Poor sandy peat is the best material to pot it in, as the growth is thus kept within moderate bounds, and the variegation is more distinct. Being semi-aquatic, the pots should be well drained, that an abundant supply of water may be given them without risk of souring the soil. In dividing the roots or shaking them out for the purpose of re-potting, pull away any green portions that may be visible, or the variegated part will be starved and die out. A brisk moist heat is necessary, but if gradually hardened, they will stand in almost any position during the summer months where they can have plenty of moisture.

Achimenes.—The latest batch of these should now be started, and those already growing thickly in pans separated and placed about 1 in. apart in their flowering pots or baskets. Keep them well up to the light, so as to prevent them becoming weak and drawn, in which state the plants present a very weedy appearance, the flowers being but little more than half the size of those produced on well-grown stocky plants. Well-drained pots or pans, with rough fibry peat, or well-decomposed leaf-soil and loam in the proportion of three parts of the former to one part of the latter is the best in which to grow them. With the requisite shade, a moist atmosphere, and plenty of water at the roots, a satisfactory condition of these plants will be ensured.

Gardenias.—Cuttings of these should now be put in, and any young plants already rooted or requiring a shift should at once be potted on, so as to get them into useful flowering size as quickly as possible. Any that have done blooming may be pruned in at once, and the plants kept a little drier at the roots till they break again, when they should be shaken out and re-potted. Gardenias are very subject to scale and mealy bug, which are very difficult to eradicate while the growth is young and tender, or the plants have flower-buds on them. When pruned in, a good opportunity is afforded of getting them in a thoroughly clean state before they commence to start any of their dormant buds. The most expeditious way is to dissolve sufficient insecticide, and immerse the heads of the plants in the mixture, or to syringe them thoroughly over a tub or other vessel. This will be found much more effectual than hand washing, for, however careful it may be conducted, some part or other is sure to be overlooked, and these troublesome insects will quickly re-stock the plant. From 4 oz. to 6 oz. of Fowler's Insecticide, or Gishurst Compound will be required to each gallon of water to make it of sufficient strength to destroy scale or mealy bug.

Pelargoniums.—The pots of these being now well filled with roots, an increased supply of water will be necessary, or the plants will soon assume a sickly starved look that no after management will set right again. Without ample foliage, and that of a healthy green colour, Pelargoniums lose much of the attractiveness they possess when cultivation has been of a liberal character. All well-established plants, and such as are at all cramped for pot-room, should at once receive occasional assistance by giving them weak manure-water; this should be done once or twice a week, or even more frequently if drying weather prevail, rendering frequent applications of water necessary. In no case should it be given at all strong, as it is always better to apply it in a well-diluted state, and oftener, than to run the least risk of an overdose of stimulants at any one time. Nothing that I have ever used answers so well for the purpose as clear soot-water, to which about a table-spoonful or so of guano to a four-gallon pot has been added. This quickly acts on the plants by the ready way it is assimilated by them, and the soot-water has a wonderful effect on the foliage, imparting to it a healthy deep green colour, such as is not attained by the use of any other stimulant. As the bloom-buds will soon be developed, whatever tying or staking is necessary should be done at once, that the plants may have time to assume a natural shape and position before the flowers expand. Stakes as near the colour of the stems of the plants as can be obtained hould be used, otherwise they are much too conspicuous, and detract from the general appearance of the plants. Dried Willow or Hazel are the best for the purpose; but even with these, only what are absolutely necessary to support the branches in their proper positions should be used, as plants of no kind ever look so well if stakes predominate, and they be made to assume a too rigid, formal appearance. Green fly is sure to become troublesome at this season, and it will require great watchfulness to keep the plants clear of them. Fumigate the moment the plants appear blighted, and before the insects have time to become established, otherwise the plants will soon become crippled and disfigured.

Forcing Houses.

Choice Rhododendrons, hardy Azaleas, and plants of that class that have been forced and have now done blooming, should be re-placed in some of the houses where they can be kept well syringed in order to encourage them to continue and complete their growth in a satisfactory manner. From insufficiency of room, pressure of work, or other causes, it often happens that plants of the above character, after having been forced, get stowed away in positions where they stand little or no chance of setting flower-buds for another season's display, and fresh batches have to be introduced that require much more forcing to obtain them early. It is, therefore, good economy to keep all that have been forced under the protection of glass till such time as they have fully completed their growth, and the leaves have sufficiently hardened to withstand the weather without becoming disfigured by spring frosts, that are sure to affect them after having been subjected to a close moist atmosphere. Plants that have been forced a few times naturally acquire a habit of blooming early, and it is much less costly to prepare them at this end of the season, while the sun is enabled to give us the necessary heat, than it is to obtain it from the coal heap, when the days are short and vegetation sluggish. Continue to introduce the necessary quantity of plants to render the flower-house gay and afford the requisite supply for cutting. The beautifully-variegated Acer Negundo is a first-rate subject for forcing, as the delicate leaf markings are brought out in a very striking manner, and far superior to anything they ever attain under any other conditions. Standards of this are exceedingly ornamental when placed in suitable positions among dark-foliaged or gay-flowering plants, such as Salvias or others that have plenty of colour to contrast with the pure white margins of their handsomely-formed leaves. For drooping over the edges of flower-stands, greenhouse stages, vases, or similar positions, the Variegated Vine is almost unrivalled. This is greatly improved in richness and delicacy of colouring by being subjected to the close moist heat of a stove or forcing house before being placed in a lower temperature. Treated in this way it is one of the most beautiful plants in existence, by the side of which those grown in the open air bear no comparison whatever. In the flower vase for dressing with others in a cut state they impart a finish so light and elegant in appearance, as to be worth growing for that purpose alone. Cuttings of the young would root readily at this season, and if planted and grown out during the summer they make fine subjects for lifting and potting up in the autumn, to be forced and used for any of the above purposes.—J. Sheppard, *Woolverstone Park.*

Kitchen Garden.

At last we have been favoured with a few fine days, and on light soils the main crops of seeds will have been sown, though on heavy clayey ground, by reason of the excessive wet, a suitable seed-bed could not possibly have been obtained; such ground should now be pointed over, and all seeds sown in drills and covered in with light soil, such as the siftings from the potting shed, intermixed with burnt vegetable refuse or leaf-mould. The main crops of Potatoes should be planted at once, giving them plenty of room; 3 ft. by 2 ft. from set to set may by some be considered a waste of ground, but we know from experience that the produce will be increased both in quality and quantity to a greater extent than if but half that distance be given. Take care that those on warm borders which will now be emerging through the ground have soil drawn over them, or are covered with litter whenever frost seems imminent. We have tried most of the American varieties, and have consigned them to oblivion as worthless, with the exception of Early Rose, Snowflake, and Extra Early Vermont; these kinds on our light soil have proved to be wonderfully prolific, and passable in quality, but will bear no comparison to such as the Old Ashleaf, Lapstone, Fluke, Paterson's Victoria, and York Regent. The autumn-planted Cabbages are now growing freely, and should be earthed up; any that are going to seed should be pulled up and others planted in their places. If new ground be selected for planting Cabbages at this season, drill them in deeply, so that when the requisite earthing up is finished, the whole plot of soil may be of the same level, that the plants may benefit to the utmost by all the rain that falls, which is of the greatest importance in a dry season. A general sowing of Broccoli, Cabbages, Cauliflowers, Kales, and Savoys should now be made. We sow thinly in drills 1 ft. asunder, and then rarely have occasion to prick out, but transplant direct to their permanent places; indeed, when the ground has been at liberty, we have sown Brussels Sprouts in their permanent positions, and certainly never have had them finer than by this mode; of course a sharp watch must be kept for slugs—bran, put down in small patches and frequently renewed, is the best remedy. Broccoli will shortly be in season, and if there be any probability of a break in the supply, dig up these that are least advanced, and hang them up by the heels in a cool shed open to the north, where they will keep good for a considerable time. When Broccoli is cut, do not leave the stumps to impoverish the ground, but dig them up and prepare for another crop, such as Celery, Potatoes, or French Beans. A sowing of the latter may now be made on a border where protection can be given. The two best varieties are—Canadian Wonder (an immense bearer), and Osborn's Forcing (a truly wonderful Bean either for forcing or open-air culture). Broad Beans are seldom in request after Peas and French Beans are plentiful, but, where a supply must be kept up, a few rows should be sown about every three weeks. Earth up the earliest sown ones, and, if desired extra early, pinch out the tops when about 18 in. or 2 ft. high, and this will induce them to flower somewhat earlier. A constant succession of Peas is expected in every garden, therefore, sow at regular intervals such kinds as have proved best in former years; of course novelties should be tried, but regard them with suspicion till fully tested. Great advances have been made of late years in the improvement of Peas; still many of the old kinds can worthily hold their position with the newer kinds, and none more so than British Queen, Ne Plus Ultra, and Champion of England, and these sorts should be sown now. Successional supplies of Spinach and Radishes may be had by sowing between the rows of Peas, as indicated in a former calendar. Lettuces that have been raised in heat, and are sufficiently hardened off, may now be planted out. The richer the soil the quicker the growth, and therefore the crisper the Lettuce; another sowing may be made in the open ground. Blonde de Berlin is a Cabbage Lettuce that is not so generally known as its merits deserve; it is much superior to any other Cabbage Lettuce we have yet grown, and the same may be said of Sutton's Superb White Cos. If the herbery have not yet received any attention, let it be no longer delayed. Most kinds of herbs do best by annual division and transplantation, and the same remark applies to Sorrel, which should be commenced forthwith. With the advent of warmer weather, Asparagus will soon be ready for use in the open air, and should be looked over every evening to cut any that is ready, as a sharp frost would blacken, perhaps destroy it; sprinkle the beds with guano or salt, either of which is more than usually beneficial at this stage of growth.

Forcing Vegetables.

Forcing, in the full acceptation of the term, will now be nearly at an end, still, greater attention will be requisite in the matter of airing and watering to prevent, on the one hand, a spindly growth, and, on the other, a check through want of moisture. Potatoes, Carrots, Radishes, and other small seedlings, should have full exposure when the sun shines. French Beans prefer to be kept closer, but should have plenty of air in the early part of the day and be closed up in the afternoon to husband the sun's warmth; at the same time they should be freely syringed to keep in check red spider. Plant out Cucumbers and keep up the required heat by frequent renewal of linings; as soon as frames are at liberty, if not wanted for more important crops, they may be filled with Ridge Cucumbers, Gherkins, Vegetable Marrows, or Tomatoes, and as soon as the plants are well established, and all danger from frost is past, the lights may be entirely removed and stowed away for the season. All kinds of herbs may soon be had from the open ground; Sweet Basil is an exception, and being so tender and always in request, must still be grown under glass for some time to come.—W. Wildsmith, *Heckfield.*

Tobin's System of Ventilation.—The question of ventilation by Tobin's process has lately been brought prominently before the public, and adapted to various public and private buildings with satisfactory results. The expense is almost nominal, as it is merely placing in a room a tube of about 5 ft. long and 3 in. to 4 in. diameter, which communicates direct with the open air. The effect is, that pure air is introduced without the slightest draft except immediately over the top of the tube, which can of course be closed at pleasure or regulated by an ordinary oven valve. Has this process been tried by gardeners in their glass-houses, and, if so, with what result? My own experience seems to point to its great value.—Jno. L. Oliver, *Uxbridge.*

THE LIBRARY.

BOTANICAL NAMES FOR ENGLISH READERS.*

Leaving the study of botany out of the question, amateurs—and it is not too much to say many professional gardeners also—encounter one great source of difficulty in the pursuit of an otherwise pleasant recreation or calling, as the case may be. We allude to the botanical names of plants. Even those who can boast a fair knowledge of Latin and Greek are often as much in the dark as to the meaning of certain botanical names as their less fortunate brethren. The vagaries of some botanists in fabricating names are astonishing. Hybrid compounds of Greek and Latin words, transposition of the letters of the name of a known genus to designate a closely allied new one, and various other ingenious devices in this direction, have done much to bring botany into contempt and ridicule. Fortunately most botanists are now guided by sensible rules, and although we may not get rid of the absurdities of former offenders, we may at least hope to be spared the infliction of others. Names are necessary, and although our friends often say "we do not want to know the Latin names; tell us the English ones," our reply in nine cases out of ten is perforce that none such exist. To the inquiry why botanists do not give plants English as well as Latin names, we can only say that few of them would ever get into general use, and therefore such a course would only increase the existing confusion. Assuming, then, that a knowledge of botanical names is imperative, it becomes a question how they may be most readily acquired. In spite of the difficulties indicated, we think that no very great mental effort need be called into action to overcome them. By a series of associations, many growers, both amateur and professional, carry scores, nay hundreds, of names of varieties of florists' flowers and fruits in their heads; and these varieties are distinguished by differences almost inappreciable to many of the most acute botanist; clearly, then, with some aid to an association of ideas, the horticulturist could retain and understand many botanical names as well as he does the names of his Roses, Fuchsias, Pelargoniums, and the rest. In fact, it seems to us that the latter are more difficult to the average gardener, when, as is frequently the case, they are in either French, or German, or Dutch, because the pronunciation of words belonging to these several languages is only acquired by comparatively few people after the days of youth are past. With similar ideas in his head, Mr. Alcock has written a book, in which he "attempts to explain the scientific names of British plants in a popular manner, so as to be useful to those who have no knowledge of foreign languages." As far as he goes, we think Mr. Alcock has succeeded admirably; we only wish it had occurred to him to extend his work to the plants commonly cultivated. This need not have added greatly to the size of the book, and it would have increased its usefulness, and doubtless its circulation, in a very considerable degree. As it is, we can conscientiously recommend it to all those in need of some such assistance in mastering the names of plants. It bears the evidence of having been carefully edited, and the explanations are terse and to the point. Without being diffuse, the author is intelligible. For example, concerning the terminations of Latin adjectival specific names, he says;—"Taking them generally they are governed in this way: masculine, *us;* feminine, *a;* neuter, *um;* as acut-*us*, acut-*a*, acut-*um*, according to the substantive name with which it may happen to be joined. In other cases, where the termination is *is*, it serves for the masculine and feminine genders, being changed to *e* for the neuter, as *gracilis*, *gracile.* We have, masculine, *niger* (black); feminine, *nigra;* neuter, *nigrum;* but such instances are not common, and where they occur they are written in full." But we are anticipating. We should explain that the book is divided into two parts; the first, comprising eighty-three pages, is devoted to a succinct history of botany and botanists. As may be imagined from its brevity, this is a very imperfect and incomplete sketch, in which only a few distinguished authors are mentioned. Some of the omissions are inexplicable. Thus Hudson, who we believe was the first to apply the Linnæan system of nomenclature in a flora of the British Islands, is not mentioned; much less could that "hortulanorum princeps," Philip Miller, of whose dictionary Linnæus is reported to have said, *Non erit lexicon hortulanorum sed botanicorum*, find a place. This part is supplemented by an appendix, containing some additional information respecting Turner, Gerard, Johnson, Parkinson, and Evelyn. The second part contains lists of all the generic and specific names (accented and explained) employed to designate our wild plants, and is far more satisfactory. Where there are two or more pronunciations, authorised by custom or derivation, they are given. Thus Cle'matis and Clem'atis, Veroni'ca and Veron'ica, etc.; and the correct pronunciation of such names as Eri'ca, Ar'butus, Ænothe'ra, and Umbili'cus. A few slips occur, which we point out with no wish to find a fault. Thus gigan'teus, the customary though incorrect pronunciation, is given, and not gigante'us rad'icans, and not radi'cans; hy'bridus, and not hyb'ridus; and rufus and ruber (red), and lutens and flavus (yellow) are given without any explanation as to the different tints they are intended to designate. But these few exceptions prove the general excellence of the work. In conclusion, we again recommend it, because, as far as it goes, in regard to the pronunciation and meaning of plant names, it is the most reliable authority we know that is accessible to every one. W. H. Hemsley.

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* "Botanical Names for English Readers," by Randel H. Alcock, 8vo, 236 pp. London: L. Reeve & Co., 1876.

EFFECTS OF NOXIOUS VAPOURS ON LONDON GARDENS.

In speaking in the House of Lords, on the motion for appointing a Royal Commission to inquire into the working of manufactories emitting noxious vapours, the Archbishop of Canterbury made some remarks that are much called for at the present time. It must strike everybody, he said, who had known the metropolis for a good many years that the gardens which used to be the glory of the neighbourhood of London were fast disappearing, and that those beautiful Cedars which were seen in the neighbourhood of London more than in any other part of the kingdom were fast wasting away. It was equally true that the rich people who used to live in the suburbs of London were going further out. In a report of an official character, strong reference was made to a state of things which existed within a few minutes' walk of their lordships' House. It is stated that along the Lambeth Embankment, between Vauxhall and Lambeth Bridges, there were works which were highly injurious to the health of the inhabitants of a very crowded neighbourhood. The trees died on that Embankment, and he was informed that the Local Board had determined not plant any more trees there. Their lordships, who were able to live in large and healthy houses, enjoyed the satisfaction of feeling that they might enjoy comparative immunity from noxious vapours and gases, and he himself, though dwelling in Lambeth, had the advantage of a spacious house with a large garden, and had the further advantage of being able to go in the country when he liked to do so; but let their lordships think of the thousands of poor, who, living in such a neighbourhood, were shut up in their narrow lanes and crowded houses from morning to evening and from evening to morning throughout the whole twelve months of the year, always breathing the atmosphere created by those neglected manufactories and heaps of manure. It must not be supposed that he did not enter into the feelings of the manufacturers. No one could have visited the Pottery Works over the river, and seen the wonderful articles sent from there to Philadelphia, without fully recognising how much good was done by these works. No one could say that because they suffered from the vicinity of a candle manufactory they did not appreciate the advantage of having bright lights and beautiful wax candles. Nor did they object to manure in its right place, but that place was not within a few minutes' walk of that House and of his own residence. What they complained of was, not that these things were done, but that proper care was not taken in the doing of them. Were they to believe that modern science could not find some remedy for these evils—that some of those gentlemen who were receiving liberal salaries for carrying on their researches could not find some way of at once preserving our health and carrying on the civilising arts in a flourishing manner among us? Manufacturers had no vested right to destroy our health in order that they might minister to the progress of the arts which they had introduced into this country. He hoped the inquiry would be granted, that it would be extended to the metropolis, and that as soon as possible legislation could rescue a large portion of the community from the evils under which it at present laboured.

Ripening of Pears.—It may be interesting to Mr. Gilbert and others to know that the northern and midland districts do not stand alone this season as regards the uncertain ripening of pears. With me, Marie Louise, Napoleon, Passe Colmar, Beurré de Capiaumont, Seckel, and Glou Morceau have been very good, especially the two last-named kinds, but Glou Morceau has been the best Pear of the season; of this a heavy crop from a pyramid commenced ripening in December, and has furnished a succession till March 30. On the other hand, Winter Nelis, Beurré Diel, Chaumontel, Huyshe's Prince of Wales, Winter Crassane, and Knight's Monarch have not ripened well, and even now (April 4) Knight's Monarch is tough and hard. The best stewing Pear this season has been Bezi d'Heri. With the exception of Winter Crassane and Chaumontel, all were grown on pyramids, bushes, or espaliers, within forty miles of the south coast, and on a southern slope not more than 180 to 200 ft. above the sea-level. Soil, light sharp loam, substratum, rock known as Kentish rag-stone.—W. Divers, *Wierton, Maidstone.*

Fruit Prospects in West Middlesex.—Another fruitful year is apparently in store for us, if we can but overcome the late spring frosts, which are always the terror of fruit growers. Apricots, Peaches, and Nectarines are blooming profusely, and, as far as my own trees are concerned, although not protected, the blossoms are uninjured. On an Apricot tree, recently literally a sheet of bloom when the weather was at its worst, hundreds of fruit have set, although the flowers looked as though they had been burnt. Probably too much protection tends to coddle and weaken the fertilizing organs of the flowers. Gooseberries and Currants are in full flower, and, if no injury follows, there will be a heavy crop of each. Some of the early standard Plums are already in full bloom, and on later sorts the buds are thickly set, even on trees that were overweighted with fruit last year. The same might be said of Apples and Pears. Heavy crops, such as were gathered last year, are not all profit, as much fruit, owing to its abundance, gets wasted, and unremunerative prices are obtained for it.—D.

Souvenir du Congres.—This new and remarkable variety was exhibited by us for the first time in September, 1873. Then, on account of its large size, fine form, superior quality, and earliness, it attracted greater attention than any other variety. The tree is an upright pyramidal grower, vigorous and very productive. The fruit grows sometimes singly, but generally in clusters of two and three from the same bud, and hangs firmly to the tree when exposed to influences which cause other varieties to drop. It weighs from one to two pounds, and it is larger than the Bartlett or Clapp's Favourite, to which it bears a strong resemblance. The skin is smooth, bright yellow, when the fruit is fully matured, with the parts exposed to the sun a brilliant red or carmine. The flesh, while it is very like that of the Bartlett, has a less defined musky flavour, and it is firm to the core. It commences to ripen about the 1st of August, before the Bartlett, and extends into September. We cannot too strongly recommend this as one of the greatest acquisitions to our lists of new and fine Pears.—Ellwanger & Barry.

House Sewage (see p. 307).—For upwards of fifty years sewage has been utilised here as follows:—All shearings of hedges, prunings of fruit trees, and any rubbish that will burn are collected together into a heap and kept smouldering for weeks, by being continually earthed up, in order to make as large a quantity of wood-ashes and burnt earth as possible. This burnt material we bank up and keep dry until November, when it is carted to the cesspool and made into a large basin or cavity, several inches thick at bottom, with good thick sides built up to the required height; the cesspool is then emptied into it, and the sides are turned in so as to form a heap, the ashes absorbing all liquid and sediment. The heap is then well banked up and allowed to be undisturbed for about a week, when it is used as a dressing for Asparagus beds, the produce of which for the last half century has never been equalled in Devonshire.—John Garland, *Killerton, Exeter.*

Slugs and Wasps.—I am curious to learn if any of your readers have remarked the extraordinary numbers of slugs this season. In the absence of any other reason, I am inclined to attribute it to the excessive rainfall of last year. Writing of garden pests and pilferers reminds me that I caught the first wasp I have seen on the 3rd inst., and to those who like myself do not admire or appreciate this interesting insect, I would urge the adoption of my plan—which I have practised with marked success for many years—viz., of offering a penny for each wasp up to the middle of June. Our village school children are keenly alive to this, and keep an active and anxious look-out for them. I must confess, however, to having been a little taken aback one day last spring when a boy brought me seventy-four in a ginger-beer bottle!—Winchmore.

30,000 trees were blown down in the Forest of Compiègne by the tornado which passed over Normandy a few days ago.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

April 5th.

The subjects of exhibition on this occasion were somewhat limited in number; but amongst them were one or two of especial interest. The new white purple-spotted Odontoglossum cirrhosum was shown in admirable condition by Mr. Spencer Brunton, of Beckenham, and is in every way a desirable addition to this popular group of Orchids. It is one of Mr. Bull's recent introductions, dried specimens of which we have recently seen, bearing over twenty flowers, on tall branching spikes. Messrs. Veitch & Sons sent their new Fern, Adiantum digitatum, which is one of the most graceful of all the Maiden-hair kinds, and several other novelties, to which we allude elsewhere. The Rev. J. T. Boscawen contributed fruit of a Cucumber which he had perpetuated from cuttings for 13 years, and which was said to be perfectly seedless, and of very superior flavour. A singularly-fasciated underground branch of Jasminum revolutum was exhibited by Mr. Kinghorn; and Mr. Paul furnished a plant of the purple-leaved Birch, which had been grafted on the common green-leaved form. The grafted portion of the purple-leaved kind had originally three buds; after the lowermost one of these started into growth, the two uppermost ones were cut off, and from the scars thus produced masses of perfectly green adventitious twigs and leaves were produced. Several large stands of cut Roses came from Messrs. G. Paul & Sons, of Cheshunt, one being filled with large, full, and superbly-coloured blooms of Maréchal Niel.

First-class Certificates.—These were awarded to the following new and rare plants :—

Adiantum digitatum (Veitch).—A distinct and graceful new Peruvian Maiden-hair Fern, which, together with the following Rhododendron, was certificated by the Royal Botanic Society last week; of both of these descriptions will be found at p. 324 of our last week's number :—

Rhododendron Princess of Wales (Veitch).—A cross between R. Lobbii and R. Princess Royal.

Clematis President (Noble).—A beautiful large-flowered spring-blooming variety of robust habit and decided merit, the result of an attempt to infuse the deep colour of the autumn-flowering or C. Jackmanii type into the early-blooming section. Its flowers measure about 7 in. in diameter, and consist of eight stout, well-formed, and much-imbricated sepals of a vivid bluish-purple colour. It forms a beautiful addition to the early-flowered section of this deservedly popular genus.

Odontoglossum cirrhosum (Henley).—This is one of the best of all Odontoglots of recent introduction. Its slightly compressed one-leaved pseudo-bulbs are clustered along a scandent rhizome, and the flowers are borne on a slender branching spike, about 18 in. in height. Imported specimens of it show from twenty to thirty flowers, and the plant exhibited bore about a dozen of a pure white colour, conspicuously spotted with chocolate, inclining to purple. Its sepals and petals are ovate with much undulated margins, their apices very much elongated into tail-like extremities, while the lip is three-lobed, the lateral lobes being serrated or fringed, of a yellow colour, streaked with close brown lines, the apex of the central lobe being continued into a tail-like curved point. The largest blooms are fully 4 in. long, by about 3 in. in width. It is a plant which well deserves a place in even the most select collections.

Miscellaneous Subjects.—Messrs. Veitch contributed a choice group of Orchids, Ferns, and other decorative plants, among which we remarked Odontoglossum Mulus, a kind which looks like a dark and profusely blotched form of O. gloriosum; Cattleya Veitchii, a beautiful hybrid, raised some years ago by Messrs. Veitch—one which has dark glossy leaves of great substance, and from five to six flowered spikes. Its sepals and petals are rosy-lilac, the lip richly blotched with velvety crimson-purple. From the same firm also came a plant of Dendrobium Wardianum, bearing twenty-two flowers on a pseudo-bulb, nearly 4 ft. in length, and several other with a less number of flowers, the white sepals and petals being richly tipped with magenta-purple. Mr. B. S. Williams, of Holloway, showed a large and effective group of new and rare Ferns, Orchids, fine-foliaged plants, and some brilliantly coloured scarlet-flowered Amaryllis. Messrs. Geo. Paul & Son furnished, in addition to four splendid boxes of cut Roses, several healthy and well-flowered little specimens of Roses in pots, one of the most distinct of these being the salmon-tinted Tea-scented variety, named Jean Ducher, a kind which has glossy foliage and fine full flowers like those of the well-known Gloire de Dijon in shape, but distinct in colour. Emily Laxton (H. P.), also shown by this firm, is a richly-coloured variety, and the pale-blush or rosy H. P. Comtesse de Sereuyi, promises to be a useful and beautiful addition to exhibition varieties. Mr. H. Bennett, of the Manor Farm Nursery, Stapleford, Wilts., contributed an effective stand of about a dozen cut Roses in good condition, including several seedlings and the new blush Rose, Comtesse de Sereuyi. Mr. Gibbons, of the Gardens, Taplow Hill, Maidenhead, sent a collection of large and richly-coloured Cineraria flowers. Mr. G. F. Wilson contributed a basketful of choice Primulas, among which we observed well-flowered plants of P. ciliata, having Auricula-like flowers of the richest crimson-purple; and P. intermedia, a kind which has deep purple flowers, rather smaller in size, but with a more conspicuous yellow eye; P. purpurea, also shown in the same collection, had neat rugose-oblong leaves and erect scapes 10 in. high, of bright lilac flowers borne in dense globular heads, the upper portion of the scapes being farinose, but without the least trace of mealiness on the foliage. Mr. F. Sanders, St. Albans, showed an example of the new Primula Roezlii, from Japan, a kind having Cineraria-like foliage and pink flowers, borne on slender hairy scapes. Mr. Harrison Weir sent a strong-growing variety of Myosotis sylvatica named "Weirleigh Surprise," a novelty having terminal clusters of white flowers, each division of which is conspicuously striped with porcelain blue. Colonel Trevor Clarke showed a double Primrose, raised at his place at Welton; it has flowers like those of the old double lilac, but they are borne on short-stalked umbels like those of a Polyanthus. The same exhibitor also furnished other fine seedling forms of Polyanthus-Primroses, some with white or creamy-yellow flowers and rich orange centres being very pretty. Mr. Ollerhead, gardener to Sir H. Peek, of Wimbledon House, sent a group of Orchids and other plants, the most interesting among them being five large baskets of a strong-growing Lachenalia named L. pendula, the drooping foliage and blossoms of which completely hid the basket. In the same group we noticed a healthy example of Lycopodium Phlegmaria, a plant with a graceful habit, having pendulous Epacris-like stems terminated by fresh green tassel-like fertile fronds. Messrs. Barr & Sugden furnished some fifty varieties of Daffodils and Narcissi, among which we noted N. Macleai, N. cernuus, N. moschatus, N. minimus, N. minor, and N. nanus, the three last-named being the smallest of all Daffodils, just as N. major and N. maximus are the largest. N. incomparabilis and the sweet-scented N. odorus were also represented by several distinct single and double flowered forms of each. One of the rarest of all double Daffodils, N. pseudo-Narcissus fl.-pl., was represented by three fine blooms, and its ally, N. Eystettensis, of Herbert, is very interesting as having the segments of the corona entirely suppressed, and those of the perianth arranged in six rows, something like those of a Lady Hume's Blush Camellia. Messrs. Fisher, Holmes & Co. again exhibited their new hybrid Rhododendron, R. Fisher Holmes, which has from three to five flowered trusses of white sweetly-perfumed flowers, each measuring from 3 in. to 4 in. in diameter. The foliage is of a deep glossy green colour, and the plant was highly commended, but was not considered quite distinct enough to merit a first-class certificate.

Messrs. Rivers sent a small collection of late Apples, and a well-flavoured Cucumber came from the Hon. and Rev. J. T. Boscawen. Mr. Parsons, of Danesbury, Welwyn, showed half-a-dozen fine examples of the Magnum Bonum Onion, which in general appearance resembles James's Keeping or Brown Spanish, but is much larger.

NOTES AND QUESTIONS—VARIOUS.

Aucuba Fertilisation.—The pollen in this case (see p. 318) has probably been distributed through the agency of bees. I have an Aucuba in my garden with three berries on it, and the nearest male plant is about 300 yards off. I keep bees and attribute the cause of fertilisation to them.—S. B.

The Cow Pea.—A plant is cultivated very largely in the Southern States of North America under this name. It now occurs in a good many varieties, the seeds of some of which are figured in the "American Agriculturist" for April. Its name is Dolichos sinensis, and it is supposed to have been long in cultivation in China and Cochin China.

Seakale and Rhubarb at Christmas.—Ought not a garden, well supplied with stable manure and with a staff of four men, to afford a supply of Seakale and Rhubarb at Christmas?—P. S. N. [Undoubtedly, if there be any kind of structure in which the usual modern way of forcing these plants may be carried out.—W. T.]

Ficus minima hardy.—This delicate-looking and graceful little plant is apparently hardy. In Mr. Kinghorn's nursery at Richmond, it is cultivated in a warm house creeping closely over the wall of the same. Some of the shoots found their way through the bricks, and are now trailing over the outer surface, having stood the winter and spring without injury.

Fruit Prospects in Northamptonshire.—All kinds of fruit, except Pears, are promising here. Pears, both on standards and on walls are very thin. Apricots, to which 700 ft. of south wall are devoted, have been quite sheets of blossom; they are protected with double fish netting; but I fear the early flowers have got frosted. Of Peaches and Nectarines we shall apparently have heavy crops. But of all places in which to grow fruit, give me cool lean-to houses.—R. Gilbert, *Burghley*.

A Simple Protector.—The "Fincastle Herald" has been informed "that a piece of iron hung in fruit trees will effectually prevent the ravages of frost. A piece of horse-shoe was hung in a Cherry tree in an orchard, and the yield was abundant; while in three adjacent trees the fruit was entirely killed!"

Echeveria-eating Insects.—What is the name of the enclosed insects? They are making sad havoc amongst Echeverias, completely eating their roots off, and boring up the centres of the stems, so that on lifting the pots the plants fall over. I am burning the soil, in order to destroy them, if possible. [The pest of which you complain is the well-known Otiorhynchus notatus.—A. M.]

Early Beatrice, Hales' Early, and Early Louise Peaches.—What is the experience of Peach growers with regard to the usefulness of these varieties, especially for early forcing? Will any of them shake the position of that old and worthy veteran, the Royal George, as a first-rate Peach for forcing?—W. E., *Chatsworth*.

Missing Coloured Plates.—We learn that agents sometimes deliver The Garden without the coloured plates. Every copy that leaves our office contains a coloured plate, and purchasers should refuse copies that do not contain the plate.

Coca.—This plant, which affords the leaf so much talked of recently, was, owing to a clerical error, mis-spelt Cocoa in the last issue of The Garden. As is well known, the two plants are quite distinct.

No. 230.] SATURDAY, APRIL 15, 1876. [Vol. IX.

"This is an art;
Which does mend Nature: change it rather: but
The Art itself is Nature."—Shakespeare.

VIOLETS AND THEIR CULTURE.

By GEORGE LEE, Clevedon.

A correspondent "R" (p. 238), in his remarks upon these fragrant flowers, truthfully says, "that few plants are more appreciated at this season of the year, by rich and poor, than Violets, and few are, as a rule, more neglected." Also, that "few people imagine that they can be improved by good cultivation; and, in preparing a bed for them, that the soil can scarcely be made too rich, provided it be open and well drained." With these statements I thoroughly coincide; but in the following directions, "that if the soil happen to be light and gravelly, some stiff material and plenty of manure must be added to it; and, if poor and hard clay, it will be benefited by the addition of some sharp, gritty matter and abundance of rotten manure," I believe that he has omitted a most important item as regards culture, viz., that "the stiff material," and "poor and hard clay," should be thoroughly pulverised before admixture with manure or gritty matter. My own impression, until lately, was that partial shade was most serviceable to the full development of Violets, founding my conviction at that time upon their natural habitats (hedgerows and woods), but subsequent experience has convinced me that a full exposure to the sun has benefited very materially both the quantity and quality of their bloom. Before I sent out the Victoria Regina Violet, I had the rooted runners taken up and "laid in" in some spare ground to the amount of some 30,000 plants. Many of these were allowed to remain in their "laid in" state over the summer, which was very dry. The soil was so thin and so fully exposed to the sun, that many of them had to be watered to keep life in them, and I expected that the show of bloom would be unsatisfactory; the results were, however, otherwise, for I had the finest possible blooms, as well as a profusion of them, and even now (their second blooming season) I have none to equal them. Of course the soil (what there was) had been made good for previous crops, and the plants had last season every attention paid to them during their growth in the way of removing all runners, and in July cutting off all the leaves, with an immediate plentiful dressing of soot; I have found that soot most effectually clears the plants from red spider, and acts as a stimulant for the loss of their leaves. It was on one of these "laid in" patches, of some 70 to 80 perches in extent, that I counted, some few weeks ago, 120 fully-expanded blooms to the square foot, about 9-10ths of which were erect, and perhaps not one of them less than 1¼ in. in diameter. Visitors from a distance frequently come to see them, and express their amazement at the size and luxuriance of the flowers. Previous to my experience as above recorded, my own impression, and indeed my expression in writing upon the treatment of Violets was just that of your correspondent, that "in deep rich soil they will bear a considerable amount of sunshine." As to the propagation of Violets they do well from cuttings, but the best method is by means of layers; it is more troublesome and expensive, but the plants thus obtained are far preferable to those produced by any other method. The trimmings of Pea sticks may be used as crooks for the runners in June and early in July, but as soon as the Fern (the common Bracken) is firm enough, this constitutes the best material for crooks, especially when Violets in quantity are required to be grown for market, as pots can be dispensed with altogether, and the plants give much greater satisfaction. Beds of plants should be set apart for runners—that is, if a good display of bloom be desired; as runners much impoverish the parent plants if allowed to remain on them. The second year the plants must be well cleared of runners several times during the growing season, the effect of which will be to materially improve the blooms both in colour and texture. The end of February or early in March is a better time for inserting cuttings than April, as then (except in the north) one does not need hand-lights and covering. Then as to planting, I used, like your correspondent, to plant in 4 ft. beds, three rows in a bed; but I now plant the beds transversely, which I find much better, especially if protection be used for the beds in severe weather. Make the beds run east and west in order that the rows may receive the full benefit of the sun in the winter and early spring months. Plants that are allowed to remain more than two years in the same bed yield but few blooms till February and March, and these are not equal to those on younger plants. It is my opinion that taking up and dividing the plants is a most barbarous method of increasing one's stock; it may succeed for a few varieties, such as V. alba compacta and some other double ones, but the plan should be avoided as a rule. I have not mentioned many varieties of Violets, having done so in previous papers on their culture; I however created some discussion about two years ago when I wrote favourably about the old Russian, respecting which I have now no reason to alter my opinion, which was to the effect that there was no Violet to supersede it for winter blooming and profusion of flowers, although its period of flowering was much shorter than that of many others not so early or so late; then there is Russian Superb, which comes in quantity the earliest of all, but it is soon over. Neither variety can be grown profitably for the market, the stems being too short, while their shape and size are also prejudicial to their sale; but for an amateur, either for pot culture, or in the open border, the old Russian is a most compact and desirable kind. As to the Czar, I am of opinion that it is a distinct variety. The Tree, the King, and other double blues, are mostly well known, but Brandyana is not so well known as it should be; neither of these suit me as market varieties, but the last for an amateur (as a spring-flowering kind) is most desirable, being a profuse bloomer; from forty to sixty fully expanded blooms of it might be covered by the open hand, and their beautiful markings make them most attractive, being white, bright purple, and blue beautifully striped with other shades. The white of the Hedge-row is much improved by culture, as your correspondent very truly observes. Some of your readers may very likely say—why all this about Violets? About twelve years ago, when I began cultivating Violets for market, I searched in vain for anything like a treatise on their culture, and as those of your readers who took an interest in the "wee modest flower" may have been equally unsuccessful when seeking for information, I trust I may be pardoned for giving the benefit of my experience in its culture, which may not be the less trustworthy from having acquired my knowledge by frequent, and in some cases serious, failures: for example, till about sixteen months ago I was of opinion that the planting season of Violets might be in any open weather from the beginning of October or end of September to the end of March; but I found, to my most serious cost, that I had made a mistake, and my beautiful Prince Consort was the victim. They had been planted in large quantities a few days only before the occurrence of severe frost, from the effects of which they have never recovered; and till even a later period I advocated a deep soil, but again I find that I have been mistaken, and Prince Consort is again the sufferer. A rich, thoroughly-drained soil is absolutely necessary for success. In some of my previous papers on the culture of Violets, I stated that the soil, when not well drained, should be taken out to the depth of 2 ft. or more, half filling the space with stones; I would recommend the placing of the stones in the form of a ridge, allowing it to rise some 16 in. or 18 in. above the surrounding surface, and placing the soil on the ridge to the depth of 10 in. or 1 ft.; the width should be 5 ft. or 6 ft. running east and west, so that the ridge faces south and north. No language can describe the beauty of Victoria Regina in my grounds this season. Imagine a bed covered with bloom (from 100 to 120 or more in a square foot) of fully-expanded flowers, scarcely one being under 1¼ in. in diameter, and this continuing for some weeks; together with a quantity of bloom from the end of August till the end of March or middle of April, and what can be more desirable in the way of flowers? Violets may be grown in pots in a cold pit or frame, for furnishing the conservatory or greenhouse, and to great advantage through December and January. The plants should be from the earliest runners, two to four in a pot, layered in June and taken up and potted early in September; they should be kept in the open ground till the end of October, and then plunged in Cocoa-nut fibre within about 8 in. of the glass, with the lights off every fine day (except it be frosty); even when wet they should have plenty of air so as to prevent drawing; divide them in three or four sets of, say, six to twelve or more each, according to space to be appropriated by their use, and allow each set to occupy the conservatory for a week or ten days, replacing them in the pit till it comes to their turn again. In this way compact growth and perfect health are maintained.

TREES AND SHRUBS FOR EXPOSED SITUATIONS.

Those who live in high and exposed situations have difficulties to contend with in furnishing their gardens, of which people who live in sheltered valleys and in the low lands know nothing. Low-lying districts undoubtedly experience the severest frosts, which are bad enough, but they are a moderate evil compared with persistent and cold winds, which starve and retard vegetation more than all other causes put together; and I speak from considerable experience in the matter. I am acquainted with gardens and parks situated many hundreds of feet above the level of the sea, where the effects of exposure on the one hand and shelter on the other are strikingly contrasted. In some of these instances the demesne may fitly be compared to a circle planted in concentric rings; the outer circle, being most exposed, is stunted and poor; the next is better; and, as we approach the centre, the trees improve both in height, girth, and luxuriance, the result simply of the shelter afforded by the other outer rings, which break the force of the blast. On one high-lying estate, exposed to the north and north-west winds, it is found that such trees as Wellingtonias and some of the more tender Conifers positively refuse to grow anywhere but in the sheltered glades of the woods. Planted in the open park, they will not thrive. The Wellingtonias were protected for the first few years by close palings some 5 ft. high; and, nursed in this way, they made densely-furnished little trees; but, as soon as they reared their tops above the line of shelter, their disfigurement began, and the attempt to grow them had to be discontinued. In the low country, however, not many miles away, and on the same formation, the same Conifers thrive amazingly. Much disappointment would be avoided if, in planting exposed sites, suitable subjects only were selected; for, although all specimens are affected, more or less, by exposure, there are many trees and shrubs that will thrive tolerably well if they get a favourable start. The following subjects I can recommend, from personal observation, as likely to grow and reach a fair size at an altitude of from 600 to 1000 ft. above the sea-level, as far north as the midland counties at least. Along the "backbone of England," and on other high-lying tracts, there are many residences situated at or near these elevations, where planting for shelter would be very desirable if it could always be carried out successfully.

Deciduous Trees.—Among these the following will be found serviceable:—Horse Chestnut, Sycamore, Oak, Beech, Double White and Scarlet Thorns, Laburnum, Spanish Chestnut (a good grower), Elm, Poplar, Willow, Birch, Mountain Ash, Gean or Wild Cherry, and Crab; the Lime succeeds also, but is liable to be disfigured by having its limbs blown off by the wind. As an undergrowth, the Hazel and Elderberry will be found excellent for forming an almost impenetrable thicket.

Evergreen Trees.—Among these Conifers rank first. The Scotch Fir will grow almost anywhere, but for shelter the common Silver and Spruce Firs are unsurpassed. If the soil be tolerably moist and deep, they grow with great rapidity in the bleakest situations, and in a few years form a dense covert. It is not advisable to plant many of the ornamental Pines, as they get thin and weedy in habit as soon as they grow to any size; at least, I never saw a handsome Conifer in an exposed situation, except P. Nordmanniana and the Deodar. These two are well worth planting, especially the latter, which grows and forms a fine symmetrical tree where few of the others will thrive. The Araucaria imbricata and the Cedar of Lebanon are the next best. The Araucaria is dwarfed by exposure, but it grows and retains its symmetry. Some of the oldest trees of this species in the country grow at an exposed altitude of 650 ft. or more, and have escaped all the severe frosts of recent years. Cupressus Lawsoniana and the hardier varieties do fairly well, and attain a good height; also the Irish Juniper, the Thujas, and last, but not least, the common English Yew and the common Holly, both of which should be planted extensively.

Evergreen Shrubs.—Many of these will live on exposed sites; but I will name such only as are likely to grow, viz.:—Portugal and common Laurel—the latter the best; of this I have seen a good bank in a most exposed situation, 1000 ft. up, on the face of a moor in the north of England. Other kinds comprise the Laurustinus (in shelter), Rhododendron, Aucuba (excellent), Berberis Aquifolium, B. Darwinii, Box, Cotoneaster microphylla, Lavender, Rosemary, and double Furze, the latter highly ornamental.

Deciduous Shrubs.—Common Azalea, Berberis vulgaris, Daphne Mezereum, Philadelphus coronarius or Mock Orange, Deutzia scabra, Ribes sanguineum (very hardy), Parsley-leaved Bramble, common Lilac, Spanish Broom, Weigela rosea, Sweet Brier, Scotch and other Roses of the hardiest kind.

Climbers.—Some of the foregoing, such as the Cotoneaster, may be trained as climbers if desirable, and the following may be added:—Ampelopsis hederacea (Virginian Creeper), A. Veitchii (for a warm wall), Clematis montana, C. Jackmanni and its varieties (very hardy), Ivies of sorts, Jasminum nudiflorum and officinale, Cratægus Pyracantha, Cotoneaster Simonsii (a rapid grower and free fruiter), Wistaria sinensis, and Honeysuckles.

The above selections are not extensive, but I have ventured to recommend nothing that I am not sure of, and it must not be forgotten that I am supposing cases where the shelter has first to be created; after this is accomplished, the variety might probably be increased, but hardly before that. A few years ago a gentleman with whom I am acquainted had his new mansion, situated on a high and bleak hill side, furnished by contract with the usual varied selection of trees and shrubs, many of them entirely unsuited, and the consequence was that before two years were over many species were dead, and others had made scarcely any growth; the place has since, therefore, had to be planted with commoner plants, but such as are likely to grow.

It now remains to say a few words about planting under the circumstances here contemplated. In the first place, nothing is so likely to promote a vigorous growth, or to sustain the vitality of plant life under adverse circumstances, as a good deep and well-drained soil. If the soil be not deep, then thick mulchings of any loose vegetable matter should be applied to the surface after the trees are planted, and for a year or two afterwards, till they have become fairly established. There is nothing so likely to promote the well-being of shrubs in any way as a good mulching. It retains the heat of the ground in a wonderful degree, and also prevents evaporation. The scathing dry winds of the spring months try newly-planted trees worse than anything else, as I have had occasion to observe very frequently, and their evil effects are felt ten times more if the soil be bare and hard, for then both branches and roots are literally starved with cold and drought. Another point is, in buying the stock to get what are called transplanted trees—that is, trees that have been moved perhaps two years previously. These are not nearly so likely to fail after planting as others are. Some nurserymen take great pains to transplant their stock periodically, while others do not trouble themselves to do so; but to the buyer it is a matter of much importance. The non-transplanted trees are generally the finest-looking and largest, never having received any check—a fact which frequently deceives the inexperienced, but they have proportionately few roots, and lifting them as they are usually lifted in a nursery simply half ruins them, and it is long before they recover the shock after planting; while transplanted trees experience little or no check at all. With the exception of Hollies, which should be planted in August, or in May or June, according to the locality, the general planting should be done in October or early in November, or it should be deferred till March or April following. Unless in very favourable seasons mid-winter is the worst season in the whole year for such work, and especially so in cold districts. Care should be taken to have the plants put in the ground as soon as they arrive from the nursery, where they should remain till they are wanted. When warmth and shelter round the house and gardens are the objects, the hardier species —such as the Firs, Birch, Willow, Mountain Ash, and others—should occupy the background, chiefly at those points from which cold winds prevail, and thick planting should be the rule. Thinning can be effected afterwards, if necessary, but nursing for the first few years is of great importance, and thick planting is the best protection. J. S. W.

NEW PLANTS, &c.

Stapelia olivacea.—A South African species, having dingy greenish flowers barred with brown, each about the size of a florin. The erect four-angled stems are covered with short downy hairs. It succeeds under ordinary treatment; but it is not at all a showy plant.—"Botanical Magazine," t. 6212.

Saccolabium Hendersonianum.—This is a pretty little pink-flowered species, which has been known in this country for several years under the name of S. Cruikshankii. It has narrow, fleshy, glaucous leaves, about 6 in. in length, and erect spikes of pale rosy flowers, the lip consisting nearly entirely of a long, white, flattened spur, fully half-in-inch in length. It is a native of Borneo, and is not very showy.—"Botanical Magazine," t. 6222.

Alonsoa acutifolia.—A slender growing herb, 1 to 2 ft. in height, bearing opposite ovate leaves, coarsely serrate, and erect spikes of bright orange-scarlet flowers. It may be freely propagated from seeds or cuttings, and makes a very pretty decorative plant in pots, or for out-door decoration in the flower garden during the summer months.—"Gartenflora," t. 849.

Anthurium Saundersii.—A singular-looking climbing Arad, bearing elegant, bright, green, digitate leaves at intervals along its slender rhizomatous stem. The digitate segments of the leaf droop gracefully, and are 6 to 8 in. in length and about ½ in. wide in the broadest parts. The spathes are small and green, the spadix being about 2½ in. in length, of a greenish colour, tinted with rose at the base. Although not showy, it is of graceful habit, and might be useful as a climber on the back wall of a moist stove. It was sent to Kew from Mr. W. W. Saunders' collection, under the erroneous name of A. coriaceum.—"Botanical Magazine," t. 6218.

Episcia erythropus.—A very pretty pale rosy-flowered Gesnerad, from New Granada, having broadly lanceolate or ovate leaves, 1 ft. or more in length, of a bright green colour above, and a dull reddish-purple tint beneath. It has been introduced by Messrs. Veitch & Sons, and flowered in their nursery at Chelsea in March, 1874. The pale rose-coloured flowers, borne in dense clusters Monolena-like at the base of the crimson leaf-stalks, render this plant a very ornamental one for stove culture.—"Botanical Magazine," t. 6219.

Talinum Arnotii, a South African plant, belonging to the Portulaceæ, having a thick brown stem or root-stock; ovate, alternate leaves, and bright yellow quinque-partite flowers each, the size of a shilling, and borne solitary on slender pedicels from the axils of the leaves. This plant is likely to be of botanical interest only. —"Botanical Magazine," t. 6220.

Bouchea pseudogervao.—An annual Brazilian herb, with opposite Nettle-like leaves and slender terminal spikes of bright purple flowers having a conspicuous white eye and yellow anthers. It is a weed in many parts of Peru and South Brazil, inhabiting woods, waste places, and rubbish heaps, and belongs to the Verbenaceæ, being, indeed, very nearly related to the Verbenas. The plant was introduced by Messrs. Veitch & Sons, with whom it flowered in September, 1874.—"Botanical Magazine," t. 6221.

Pelargonium oblongatum.—A pale-flowered species from the Cape of Good Hope, bearing large yellow flowers in terminal clusters, the anthers being borne on slender curved filaments and of a bright red colour. It is in cultivation in this country, and is likely to be of some service to hybridisers. The figure cited below is a most faithful portrait so far as the flowers are concerned, but no evidence is given of the characteristic thickened root-stocks, and the foliage is represented as contemporaneous with the flowers, whereas it is never or very rarely so produced by the plants we have seen in cultivation at Kew and elsewhere, and we find this character well shown in the "Botanical Magazine,"—"Revue Horticole," 1876, t. 91.

PEARS ON APPLE STOCKS.

Fruit growers are more than ever on the alert to discover any possible improvement in the raising and management of fruit trees. The selection of suitable stocks, according to the object in view, is, of course, of the first importance. Although the Pear will thrive, for a few years at least, on many of its more or less near allies, as the Hawthorn and Medlar, nurserymen rarely employ more than two kinds of stock—usually the common Pear and the Quince. Within the last few years double grafting has found some very strong advocates, notably Mr. Thos. Rivers, who says that an acre of double-grafted Jargonelle Pears would be a little fortune to a gardener. The stock in this case is the Quince, grafted with the Beurré d'Amanlis Pear, and this with the Jargonelle. Mr. Stole, the Director of the Pomological Institute of Proskau, writing in the "Monatsschrift," for March, on this subject, again recommends grafting Pears on Apple stocks. The main advantage of this stock is early productiveness; and this is an important consideration to many planters. Mr. Stole states that Pear trees thus raised will bear good fruit the second season; and, although they are not very long-lived, they are exceedingly prolific for a number of years. The Apple stock is not advocated for permanent orchards, but it is said to be very advantageous and profitable to the growers for market, to whom a speedy return on the capital expended is of great moment. This plan finds practical application in some parts of Prussian Poland, where fruit is largely grown for the markets of Berlin, Posen, &c. At Czerventzitz, near Posen, the writer saw last autumn considerable plantations of miniature Pear trees on Apple stocks, each tree laden with handsome fully developed fruit, and abundantly confirming the merits of the system for the purposes indicated. To ensure success, strong healthy stocks alone should be employed. No particular varieties are recommended, but we presume those commonly grown for market are intended, as the writer goes on to say that fine fruit of Beurré Diel, &c., weighing a pound each, will fetch from 1s. to 2s. each, even in Posen. But it must not be forgotten that Posen, although a degree north of London, possesses a much more favourable climate for ripening fruit than any part of England. Grapes ripen perfectly against reed screens or palings. Nevertheless, grafting Pears on Apple stocks may prove to be of practical value in this country. H.

The French Paradise Stock.—Thinking, during some recent discussion as to the merits of this stock, that experienced growers in America might be able to throw some light on the subject, we wrote to Mr. J. J. Thomas, a pomologist of long and deserved repute, author of a standard book on fruit culture, and pomological editor of the "Albany Cultivator," who obligingly replied as follows:—"The French Paradise Stock grows well on strong soils, with suitable pruning and cultivation. Neglected, and on light soils, it frequently fails after a lapse of several years. The oldest trees with which I am acquainted in western New York are on the grounds of Ellwanger & Barry, at Rochester. Trees which have been worked on it thirty years old still possess a fair degree of vigour, having stems 6 in. to 8 in. in diameter, and the trees are about 8 ft. high, with about the same extent of branches. Twelve-year-old trees are 5 ft. or 6 ft. high, and 4 in. or 5 in. in diameter. On my own grounds, which are a strong clay-loam, trees which have been planted twenty-five years are 7 in. in diameter at the base, and are about 10 ft. high, with 10 ft. spread of top. These have been sparingly pruned. In these remarks I carefully distinguish the true French Paradise, with its peculiar yellow wood and small fruit, with a mixture of sweet and bitter in its flavour. It will always afford me pleasure to furnish any information I may possess in relation to fruit culture in this country.—J. J. Thomas.

Picking Over Apples.—There is much to be said both for and against picking over Apples. I would give little for the discretion of a person who would not touch his Apples from the time when they are gathered until they are used. To say that decayed fruits will not infect their neighbours is against both reason and experience; undoubtedly they will, and particularly so when the fruits are first gathered and going through what is termed the "sweating" stage; let one decayed fruit remain, and it will be found that it will affect all around it. I have not been convinced of this by a solitary instance, but by thousands. The process is much more rapid at this stage (sweating) than afterwards, though at all times it is certain to take place, except, perhaps, in the case of a few very hard-skinned fruits. Handle fruit as little as possible at all times, and especially after the New Year; if it be wanted to keep, not a fruit should be "picked" up in the hand and placed in another part of the room, as is usually done, just to keep all tidy. Of course, this does not matter much in the case of cooking Apples.—John Taylor.

NOTES OF THE WEEK.

—— In the old-fashioned flower garden at Wimbledon House there is a fine plant of Cydonia japonica, 60 ft. in circumference, and from 8 ft. to 10 ft. in height. Being now covered with bloom, it is, as might be expected, a very striking object.

—— We have just seen flowers of Mr. Geo. Smith's new double-flowered zonal Pelargonium, named Wonderful. It is a sport from the well-known variety called Vesuvius, and one which is well adapted for decorative purposes and for supplying cut flowers. Its colour is a brilliant scarlet, and its flowers are very durable.

—— The Fritillaria, called F. meleagris var. Hector, in Mr. Barr's collection, and now in bloom, is a very singular plant, not without beauty. It seems larger and stronger than the type, and is shining green outside, and spotted and netted with dull crimson within the large drooping bell. If a variety of the common Snake's-head, which is doubtful, it is a valuable one.

—— Dr. Tristram, the Chancellor of the diocese of London, on Monday week granted the application by the Rev. H. Jones, rector of St. George's-in-the-East, for a faculty to convert a part of the churchyard into a flower garden, so that we may hope to see more London graveyards made beautiful. The planting of a few trees likely to live in London should take precedence of every other kind of gardening, however, in such places.

—— It is with satisfaction we notice that the beautiful varieties of Auriculas are becoming plentiful at our London flower shows in spring. There are surely no more lovely flowers, especially when grown as was the collection shown by that excellent cultivator, Mr. Douglas, at the Westminster Aquarium the other day. We trust that many amateurs will take up their culture, and that raisers will so strain their rules that we may have all the variety of lovely colour of which the plants are capable, as well as the particular modulations desired by the "Florists."

—— Mr. Perry, in the Hale Farm Nurseries, dotted some hardy bulbs through the tufted carpets of the mossy Saxifrages last autumn. They were not planted so as to touch the earth, but simply plunged in the moist mossy tufts. All the bulbs rooted through the Saxifrage into the earth and flowered, and the effect has recently been very pretty. The carpets formed by the dwarfer mossy Saxifrages offer good positions for the growth of small bulbous and similar plants, and they do not hurt each other in the least.

—— The idea of the wild garden has been taken up with earnestness by many lovers of hardy flowers. A forester, writing to us this week, says:—"I am forming plantations of the Lily of the Valley, with which one of our outskirting woods is overrun. I have brought in three cartloads of it to plant alongside our drives. I planted three cartloads of Daffodils two months ago: they are now in blossom, and look effective already." Our woodlands thus treated will, we believe, in good time afford more real beauty than the prim flower-gardens of the present day.

—— From Aldborough Rectory gardens—one of the old homes of the rarer hardy flowers—the Rev. Mr. Nelson sends us blooms of Polyanthus Golden Prince, which he describes as just now a blaze of colour in the garden. It is a robust and beautiful variety, of a rich golden colour throughout. Although called a Polyanthus, it has the broad showy flowers of the stoutest forms of the Primrose. From the same garden we also have Primula Nelsoni, a white Alpine Primrose, of the origin of which we know nothing, but it is no doubt a white form of P. viscosa.

—— The Rose has been so long the subject of ill-treatment at flower shows, arranged in the stiffest possible manner in oblong boxes, that it is pleasing to notice a slight change for the better. The Roses shown at the Westminster Aquarium show the other day in round baskets, were very attractive. Messrs. Standish had some in baskets, with a nest of Rose-leaves round each small group of flowers. Mr. Wills' way of placing Roses singly or in groups, in rich flakes of Lycopodium, is also good. We shall no doubt soon see the Rose, with all its beauty of foliage and natural grace, at our flower shows, as well as in all its glory of colour. It, however, is but one of many subjects that, as yet, are not seen to advantage at our flower shows.

—— It is with great pleasure we notice that the beautifully laced Polyanthuses are beginning to be seen at our flower shows once more, and we hope they may find a home again in many gardens. There seems some monotony in them at present as regards colour, and it is to be hoped new raisers will not be so guided by old rules, that the variety so desirable in such plants may not be gained. A hardy race of well marked and beautiful forms is what is wanted for our gardens generally. Raisers would do well to consider the names they give these modest flowers. One was named "Consternation!" This reminds us of a nursery catalogue in which a modest but free-blooming Alpine flower is described as a "tremendous bloomer."

A Well-bloomed Pyrostegia ignea.—At a recent fortnightly meeting of the Central Horticultural Society of France, a branch of the beautiful and but little known Bignoniaceous plant, described by Presl in his "Symbolæ Botanicæ" under the name of Pyrostegia ignea, and known to other botanists as Tecoma venusta, was exhibited by Madame E. Léon, from Sainte Croix, near Bayonne, Basses-Pyrénés, profusely covered with flowers, which excited much interest, as the plant is but a shy bloomer and of difficult culture in the neighbourhood of Paris. Madame Léon was requested to inform the society whether the abundant bloom on her plant was due merely to the warmer climate where she lived, or to any special system of culture adopted by her. A special certificate of merit was awarded it.—W. E. G.

Gardenia Flowers all the Year Round.—Though the natural flowering season of Gardenia florida is early summer, yet it blossoms during winter and early spring; indeed, the same plant produces flowers in succession for a long period. One cultivator, who grows it in quantity (old bushes, seldom repotted), on the back shelves of his warmest Pine stove, tells us that he is hardly ever without flowers all the year round. At all events, by having a few bushes and moving them into the hottest division as required, a succession of flowers may be had for a long period. The Gardenia is so strongly scented that one flower is usually enough at a time for a room. It forms a handsome shrub, which should not be over-potted, and, during the growing season it should be well exposed to the light, but thinly shaded from bright sunshine. Heat and moisture it delights in while in active growth, and at all times it will perhaps bear with advantage as high a temperature as any stove plant. Some recommend cutting back the shoots freely after flowering; but, except so far as keeping the plant in shape, the practice is not essential. The great point is to get a free growth and keep the plant free from insects—bug and scale—which are exceedingly partial to it. —W. S. J.

Flower Beds.—What is your opinion as to the propriety of planting an oblong bed as follows:—Centre block, Coleus Verschaffeltii splendens, edged with two rows of Crystal Palace Gem Pelargoniums; or shall I use Golden Feather instead of Pelargoniums? —H. M. [You had better use the Pelargonium Palace Gem in union with your improved Coleus, and if you were then to edge the bed with Blue Lobelia—say two rows of L. pumila grandiflora, or Blue Stone, the effect would be much improved. One of the prettiest round beds we saw last season was planted thus—Central mass, Coleus, then a ring of Centaurea ragusina, then a row of Iresine Lindeni, followed by the Golden-leaved Pelargonium Crystal Palace Gem and Blue Lobelia.—B.]

Cape Heaths at Home.—As regards vegetation, I believe Nature is neither so unyielding nor inflexible as many insist, but is, to a certain extent, governed by circumstances. That Nature often deviates from accustomed ways, and seems none the worse for the change, is obvious to all intelligent observers. In corroboration of my assertion, I will cite but one instance, which came under my notice in South Africa, namely the Erica, which is an interesting genus, always considered so difficult to manage in cultivation. Of all the plants which come under a gardener's care, Cape Heaths require, probably, a higher order of floricultural skill than most other plants do to ensure success. At the Cape of Good Hope, Erica imperialis, E. pellucida, E. grandiflora, E. viridiflora, E. vestita alba, E. mirabilis, E. princeps, E. blanda, and many others, I saw springing from slight cracks and openings in the rocks, and growing amazingly, with apparently little or no soil to support them, and where the sun's rays literally blazed upon them. The same kinds, with numbers of other species, were equally happy and vigorous on the mountain-sides, beneath shady, broad-leaved forest trees; near the sea-beach, in the snow-white sand, and in boggy hollows. With such a variety of soils and conditions, they flourished, as if to show the different ways Dame Nature had of doing things.—W. T. Harting.

THE GARDENER'S SOLILOQUY OVER THE SEED CATALOGUES.

To sow? or not to sow?—that is the question:
Whether 'tis nobler in the mind to suffer
The greatest torment of a gardener's life
In poring yearly through "fat catalogues,"
Or to take means by popping them, when sent,
In the waste basket—to be looked to
No more; and by doing so, to say we end
The thirst for new and "special novelties"
That flesh is heir to. 'Tis a consummation
Devoutly to be wished. To grow?—to sow?
To grow?—perchance to cram our beds and borders
With useless rubbish. Aye, there's the rub!

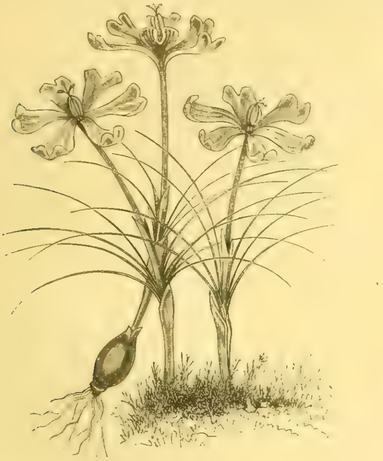
W. Tillery.

THE INDOOR GARDEN.

A NEW HALF-HARDY BULB.

(SYRINGODEA PULCHELLA).

This is a dwarf slender-habited little plant from Southern Africa, almost Crocus-like in general contour, but more nearly allied to the Ixias and the Trichonemas, both strikingly handsome genera now too seldom met with in gardens. It was discovered by Mr. H. Bolus in plains among the Sneeuwberg mountains at an elevation of about 4600 ft. above the sea, where it flowers in April; bulbs collected by him and sent to Kew flowered in September 1873. Our illustration represents the plant as figured in the "Botanical Magazine," t. 6072, about half the natural size, the whole plant, flowers and all, rarely exceeding 4 in. in height. The bulbs are about the size of small Hazel Nuts, and of nearly the same colour, the slender sub-cylindrical leaves being almost thread-like, and of a deep green hue. The flowers are solitary, and somewhat Crocus-like in form and colour, the tube being very slender and nearly 3 in. in length. The perianth segments are open or gently incurved, and of a soft lilac colour streaked with deep purple behind. The three anthers are closely adpressed, and of a golden yellow hue, the apex of the long and slender style being tri-lobed, and fringed with short hairs. It is a most elegant and attractive little plant, and one which, together with its allies, we should like to see more abundant. B.



Syringodea pulchella.

CISSUS DISCOLOR FESTOONED.

It is not too much to say that this is one of the most singularly beautiful of stove climbers. When grown in a hot stove, where it ought to be, the leaves acquire that gorgeous lustre and colour which give the plant its splendid appearance; and it is only when it is allowed to scramble in festoons about the roof of a house, drooping its long tapering shoots here and there, that it is seen in its true character. To train it on a balloon-shaped trellis, as it often is for exhibition purposes, is about the worst way of growing it that could be conceived. The plant must have a high temperature and generous treatment, as it will grow 20 ft. or more during the summer months, and produce leaves splendid both in size and colour, and such as can be produced in no other way. We once grew it in this way in a warm Orchid house—running it round the house in festoons, and up and down the columns, never restricting it in any way, and it was a spectacle worth going miles to see. It is seldom that this Cissus is grown in this way or grown well, and though the leaves are always beautiful, it is only when it is growing fast and draped with plenty of young shoots and leaves, that a true idea of its beauty can be formed. It strikes freely from cuttings made from the points of the young growing shoots, and inserted in sand under a bell-glass, and plunged in a bottom-heat of about 90°. Young plants succeed best. We used to strike them annually in February, for the purpose referred to, and always had good plants. As soon as the cuttings were struck they were potted off in 4-in. or 5-in. pots, and again plunged in bottom-heat in a hot pit, and when the roots reached the sides of the pot they were shifted, for the second and last time, into 10-in. pots; the compost should be loam and peat in equal quantities, about one quarter well-rotted cow manure, and plenty of sand if the loam be heavy. After this they were put in the same pit again till established, and then removed to the Orchid-house about the middle or end of April, when the temperature of the house had attained to about the summer figure. A plant was set to each iron column, up to the top of which they ran directly, and then they were led round the house on both sides of the path with string, which is handier than wire for festooning. We are preparing plants in this way now for a similar purpose. It is too late now to put in cuttings, but young plants are cheap, and half-a-dozen are sufficient for a long house if treated as here directed. The only enemy almost the plant has is the mealy bug, but a little attention with the brush will keep it down if the plants be kept growing fast, as they then run away from it. Frequent applications of liquid manure will also be serviceable in promoting a quick and vigorous growth. J. S. W.

BRYOPHYLLUM CALYCINUM.

This is a singularly interesting plant, both as regards foliage and flowers. When in bloom it presents successively two distinct aspects; first, when the calyx develops itself—membranous, inflated, smooth as silk, cylindrical, round at either end, of a pea-green colour streaked with red, increasing in size until it becomes 1½ in. in length; and afterwards, when the corolla-tube, which is five-cleft and of a dull red colour, breaks through and protrudes half-an-inch beyond the toothed limb of the calyx. In a neighbouring greenhouse, a plant of Bryophyllum, three years old, from the leaf-bud, is now producing over 300 flowers—if I may call the oblong, inflated calyces flowers, for, as yet, few have revealed the corolla. The blooming-stalks are about 3 ft. in height. The flowers, borne upon slight pedicels, droop directly downwards, and are swayed by every breath of air like so many suspended Chinese lanterns. In panicles, 300 or more of these form a singular display, and one that is, perhaps, worth waiting three years for, if one is not already over-familiar with the plant. But there are other characteristics about Bryophyllum that render it desirable, foremost among which may be mentioned its endless powers of reproduction. Years ago I was told, when first I procured a leaf, that it was necessary to suspend it by a thread in an airy warm place, so that nothing should touch it, and that in three weeks young plants, furnished with root, stem, and leaves, would develop at the end of every nerve or between the crenatures. I followed the directions, and the promise was fulfilled; but had it been placed upon the mantel-shelf, or upon earth, the same result would have followed. Indeed, I have found plants 6 in. high in the garden which had, through the summer, grown from fallen leaves. It is not true, however, that a bud grows from every junction of two scollops; a parent leaf does not seem able to produce or support more than two or three plantlets, and these appear only when it begins to wither. Le Maout and Decaisne say that "these buds, which spontaneously fall off and root in the earth may be likened to embryos that do not need to be fertilised before developing; and the leaf may be regarded as an open carpel on which the seeds have been developed by nutritive action alone." But, in my experience, the buds do not drop off, but, on the contrary, if I remember rightly, are very persistent. After the plantlets have attained 1 in. in height, it is best to cut them out, leaving a portion of the parent leaf, which will continue to support them until the small roots have taken hold of the soil in which they are planted. The compound leaves are unequally pinnate, with, for the most part, five leaflets to a main petiole. They are thick, opposite, elliptical, the terminal leaflet larger than the rest, and ovately elliptical, doubly crenate, dark green, fresh-looking and vigorous. The growth is exceedingly rapid, and the young plant thickly foliaged, highly symmetrical, and beautiful in every way. As it grows old, however, or prepares to bloom, the leading stalk or stalks which grow as straight and as precisely graduated as a Bamboo cane, lose their foliage. If cut down they will start, however, with all the beauty and vigour of young plants. They may be treated the same as any other Crassulaceous plants, and flourish alike in the sitting-room, greenhouse, or border. E. S. Carman.

River Edge, Bergen Co., N.J.

NEW DOUBLE POINSETTIA.

This, which you have so well represented at p. 288, seems likely to rank highly among winter flowering plants, for if it only turns out to be half as grand an acquisition as it is said to be, and is found to be as easily cultivated as the old single kind, it will undoubtedly soon become a popular plant. The fault of the Poinsettia is its rather lanky habit, which necessitates special culture in order to have it of a size and shape suitable for ordinary purposes. One great bush or thicket of the plant in a house where there was plenty of room, would doubtless be a splendid object: but for general decorative purposes it has to be grown in pots of various sizes, and to have it of convenient size its growth has to be restricted. It strikes very freely from cuttings. The usual way of providing a stock of plants for winter is to start the old stumps, which are usually kept rather dry and cool in a greenhouse or pit till June or July, in a stove, vinery, or other place where a temperature of from 65° to 85° can be afforded them; they soon break, and as soon as the shoots are a few inches long, they are taken off, but clean at a joint in the usual way, and inserted singly in small pots, or, what is better, in the pots in which they are to flower, using a rich compost of leaf-mould and good turfy loam, or peat and loam, with a sprinkling of sand; but taking care to make a hole with the finger where the cutting is to be inserted, and to fill it up with silver sand, in which, of course, the cutting first roots. This plan saves the trouble of potting off, and the plant is not checked in growth. When struck singly in pots they need to be shifted on afterwards, putting one, two, or three plants in a pot just as desired. In dealing with the old P. pulcherrima at one time, when we used to get batches of it speedily, and with as little trouble as possible, the cuttings were put in a few inches apart round the side of a 6-in. or 7-in. pot, and one in the middle. In this way they were struck, and afterwards pushed on rapidly till they flowered. One object was to have a bushy plant, and the cuttings were put in in August. Of course the old variety produces but thin or single flowers, and a thicket of shoots was needed to get a good display; but with the new, double, large-headed one, single plants will no doubt look well, and it will be advisable to crowd the cuttings. To strike it successfully it requires a close and moist stove temperature and a bottom-heat of 85°, or thereabouts. General culture consists in liberal watering and generous treatment, in order to get stout shoots and good heads of bloom. J. S.

THYRSACANTHUS RUTILANS.

This is an excellent winter-flowering plant of easy culture. Its shoots grow up singly and perfectly straight to a height of 2½ ft. or 3 ft., and long racemes of bright crimson flowers are produced from their summits, and droop gracefully down to the surface of the pot. There are few or no plants that have the peculiarly graceful weeping habit of the Thyrsacanthus, a circumstance which renders it so useful for certain positions—as, for example, on a pedestal, around which the flowers hang like a crimson drapery. I ought to state that the size just recorded relates to the annual growth, for the plant attains to a height of 5 ft. or 6 ft. if not cut down; but vigorous young plants, cut down when done flowering, or propagated from cuttings, make the most useful specimens. Perhaps the best way is to grow plants from cuttings annually, as follows:—After flowering a cluster of young shoots is always produced at the top of the old ones. These should be taken off, cut below the third joint, and struck in sand in a moist close temperature on bottom-heat, like the Poinsettia. When fairly rooted and slightly, hardened off by being lifted out of the plunging material, they should be potted in 6-in. and 8-in. pots, two or three plants in a pot, in order to make a bush, and in a rich compost of leaf-mould, tan, rotten manure, and sand. They will require no further shifting, and they need no staking. From the time they are potted till they come into flower they must have a genial stove temperature, and be grown on rapidly, taking care that they are not pinched for want of water or checked by cold, evils which cause the lower leaves to fall off. By November, if all has gone well, they will be throwing out flowers, with long thread-like stems, which generally push a foot or eighteen inches before the first flowers expand, while the extremity of the runners usually fall below the level of the pot; consequently the plants must be lifted well up and placed upon an inverted pot, or something else, so as to give the flowers light and air. The plants will continue to throw up flowers throughout the winter, but it is well to have a few plants retarded in an intermediate house to insure a succession. Cuttings may be put from February to May, but after April it is better to trust to cut down plants shaken out and repotted and started in bottom-heat. Chef.

PHALÆNOPSIS INTERMEDIA BRYMERIANA.

I have just seen this novelty, kindly furnished by Mr. Brymer, of Ilsington House, Dorchester, and a most beautiful variety it is, bearing from twenty-five to thirty flowers, rather closely arranged on a dark purplish-coloured spike. The flowers are those of the typical P. intermedia of Lindl. (see Lem. Jard. Fl., t. 44) in size and shape, but very different in colour from either those of the type or P. Portei now in bloom in the Londesborough collection. The flushing of soft lilac at the bases of the sepals and petals reminds one of the figure of P. Portei in Warner's "Select Orchids," but here in addition to the soft spreading wash of lilac, we have distinct indications of the dotting which belongs to the typical plant, and as shown in the late Dr. Lindley's own sketch now in the Herbarium at Kew. This P. intermedia is a singular plant, for although we have only six or eight examples of it in cultivation, scarcely two are alike. Messrs. Veitch have a form very near the type of P. intermedia as figured by Lindley, but in this case the petals are pure white, and the lip shades into white at its bicirrhose apex, and the P. Portei in the Londesborough collection has not the flushing of rosy lilac on the sepals and petals as in the specimen figured from Mr. Robert Warner's collection. The new P. Brymeriana is, however, abundantly distinct as a variety from all others which I have yet seen, and to my mind is by far the most beautiful. Its sepals and petals are white—pure crystalline white—delicately flushed with lilac at the base, and also furnished with evidence of profuse dotting, the lateral sepals being distinctly dotted with brown just behind the lip, viewing the flower from the front. The lip is very beautiful, the lateral lobes being of a bright amethystine-purple at the rounded extremities, delicately veined with deeper purple, while their narrowed and thickened bases are of ivory-like whiteness, and having the characteristic brownish streaks and dots. The crest resembles that of P. amabilis in being white suffused with yellow, and dotted with brown, but it is smaller, and the basal lobes are not quite so distinct. The central lobe of the lip is yellow at the extreme base near the crest, and profusely dotted with red; then the yellow becomes suffused with bright amethyst purple, forming a rather bright maroon tint, which shades into bright amethyst at the bicirrhose apex, even the short tendrils being amethystine. A dark purple line runs down the middle of the central lobe of the lip, and as this approaches the bicirrhose apex, it forms a short ridge of about two lines in length, and easily seen when the flower is viewed laterally. It is very difficult to describe the brilliant colouring of the lip, but it seems to have more blue in it than any other of the forms of P. intermedia, and this gives an amethystine or stained-glass-like appearance to it, similar to that of the best and brightest forms of P. Luddemanniana, and it is this brilliancy which adds so much to the distinctness and attractiveness of the plant as a distinct variety. The column is of a bright rosy lilac colour. Independent altogether of the glowing colours of the lip, as contrasted with the more chaste crystalline lilac-flushed sepals and petals, the latter are delicately rounded and of great substance; hence the plant lasts a long time in beauty. F. W. B.

Ivy in Houses.—Some time ago one of your correspondents inquired as to the healthiness of Ivy in houses. It is often grown in rooms in Norway and, I believe, in Sweden for its beauty, and I have seen it trained over a window and along the walls in graceful festoons. It cannot, therefore, be unhealthy.—P.

THE KITCHEN GARDEN.

SCARLET RUNNER BEANS IN TRENCHES.

For some time after its introduction into this country, the Scarlet Runner was merely prized for the beauty of its brilliant blossoms, and had not its merits as a vegetable become so fully recognised, it would doubtless have been largely employed as a decorative plant in pleasure grounds, from which it is now generally banished. Nevertheless, for climbing round and covering old tree stumps in shrubbery borders, few climbing plants are more suitable or effective. Considered, however, merely as a vegetable, it deservedly holds a high position, as, owing to its easy culture and enormous yielding properties, and being more than most occupants of the kitchen garden uninfluenced by seasons or disease, a large amount of produce may be obtained from a small space of ground.

There is one point connected with its general culture, however, which has somehow escaped attention, and that is the want of a system of sowing to ensure a proper succession of tender Beans during the season. In the generality of gardens, one particular spot is chosen for Scarlet Runners—often some boundary line where they are intended to shut out some unsightly object. Here the one annual sowing is made, and if the season happen to be hot and dry, the chances are that just when their produce is most needed, they run short. To ensure good produce, a fair supply of nutriment when the plants are in full bearing should be the first consideration. Runner Beans, when in full growth, make heavy demands upon the soil, and if not complied with, an attack of red spider and consequent deterioration in quality are the result. To ensure perfect success, some pains should be taken in the preparation of the soil; and the most uniformly satisfactory system which I have ever employed is sowing in trenches, that is to say, slightly below the level of the surrounding ground, a plan which ensures their being thoroughly watered in dry weather. The ground should be marked out with a line to the length required; the soil should then be taken out two spits in width and about the same in depth, cutting down one side quite straight and level, and throwing the soil out on the opposite side. This should be done some time before the Beans are planted, in order to allow the soil thrown out to become well sweetened. At sowing time, having previously placed good strong sticks close at hand, a layer of manure should be placed in the bottom of the trench; a lad should then take the sticks and place their ends firmly upon the bottom, setting them upright against the even side of the trench; a man should then fill in with the soil already mentioned, mixing with it some manure as the work proceeds, and treading the sticks firmly in, in order to make all secure. In this manner the labour of cutting sticks will be saved, and they will have a firmer hold of the ground than they would have if merely inserted in the ordinary way—no small advantage, as in exposed situations they are liable to get displaced in rough windy weather. Where one pair of hands only are employed, enough soil must be drawn to the sticks as they are placed in position to keep them upright until the trench can be filled up. If, as I have mentioned, the trench be not quite filled, and if, moreover, it be mulched with manure or litter of some kind, the labour of watering will be much reduced, the whole amount given going direct to the root. The evil regarding watering outdoor crops grown upon the level without mulching is that the water does not penetrate readily where it is most needed; the surrounding soil being lower than that actually occupied by the roots, the water runs off without benefiting the plants. To many, this method of growing Runner Beans may appear to involve a greater amount of labour than is necessary; I write, however, for small cultivators—those principally who are obliged to make the most of a limited area. Market gardeners, of course, who grow Beans in large quantities are naturally obliged to get through their work in a somewhat quicker way, and could not well be troubled with sticking and other details of that kind. I am sure, however, that anyone who will make a trial of the plan just recorded, and will compare the results with those obtained in the ordinary way, will never begrudge the extra time and labour bestowed. I should not recommend Runner Beans to be sown before the first week in May, as if up before the latter end of that month protection must be afforded them, and many would not care to incur that trouble. A second sowing should be made towards the end of the month, and then again about the middle of June. These three sowings will ensure a good succession of tender juicy Beans, care being taken to keep them well gathered, as if the haulm remain heavily loaded for a few days only, its growth will be stopped and the yield much diminished. There is no advantage in allowing the haulm to run to a great height; therefore top it at 5 ft. from the ground, so as to have the Beans lower down, where they can be seen and easily gathered. So much ground will not then be overshadowed and made useless. Runner Beans are excellent preserved in brine and kept for winter use. I have often wondered that they are not more extensively used in that way than they are, for, when properly done, they may be had good during nine months out of the twelve. I have eaten in the months of January and February Runner Beans as juicy and full of flavour as when freshly gathered in the growing season.

In order to preserve Runner Beans good and fresh for winter use they should be cut in the ordinary manner as for boiling, well dredged with salt and placed in a glazed earthenware jar. It is not necessary to fill the jar at once, but each time Beans are put in they should be covered with a layer of salt, and the jar should be covered. In this manner they make their own brine. Only young tender Beans should be used, and upon using care in this respect depends the perfect success of the process; all old and tough Beans should be rejected, for, if any containing seeds be employed, the brine becomes tinged and the Beans when boiled discoloured. Beans thus preserved should be soaked in cold water at least twelve hours before cooking, in order to draw out the salt. I have lately cooked some which had been two years in pickle, and found them in all respects perfectly good. J. Cornhill.

Byfleet.

Self-covered Seeds.—Mr. F. Darwin read before the last meeting of the Linnean Society a paper on the "Twisting of the Awn in Stipa and other Plants," the effect of which is to force the seed into the ground; the upper feathery end of the awn being relatively fixed, the seed worms its way into the soil. Mr. F. Darwin, finding that the seeds so buried did not germinate so well as those which were simply placed on, or just beneath the surface of the soil, suggested that the burial of the seed was intended as a protection against seed-eating birds.

Potatoes by Express.—At a late meeting of the Royal Horticultural Society, Messrs Hooper, of Covent Garden, exhibited a dish of the Potato Alpha, the result of a simple mode of forcing adopted by Mr. Barker, of Littlehampton. The sets were planted on January 13 in large pots, which were placed in a greenhouse pit facing south, from which frost was excluded by a single flow and return pipe. On March 7 the crop was lifted, and a portion sent for exhibition. The tubers were of good size, the colour delicately white, with a very faint tinge of rose about the eye.

House Sewage (see p. 307).—House sewage in the garden, if used with moderation, causes both fruit trees and vegetables to grow more luxuriantly, especially in dry summers, than they otherwise would do. If the sewage be strong it is best to dilute it with one half water when applying it to Strawberries, Currants, Gooseberries, and standard fruit trees. The best time to use it is after the fruit is set and swelling, and in the case of Strawberries it should be discontinued some time before the fruit begins to colour, for fear of deteriorating its flavour. It may be applied to vegetables without dilution after showery or rainy weather; it is particularly suitable for all the Brassica tribe, and for Celery. I have never tried it for evergreen shrubs or for coniferous trees, but if used in dry summers in a diluted state I should think it would be the means of making them grow more vigorously.—W. Tillery, *Welbeck.*

Celery and Celery Trenches.—The produce of the first sowing will be up some time ago, and care should be taken to keep the young plants from damping off. I generally sift a little good soil or old rotten manure, and distribute it with the hand amongst the young plants, which strike fresh roots into it. Never allow them to get dry, if possible, and when the plants are ready for the nursery bed, get them pricked out as soon as possible. I water them every day, and when the plants are established I apply diluted nitrate of soda, but with care. I make my trenches 10 in. deep, and from 15 in. to

18 in. thick, and 5½ ft. from row to row in March; forming the trenches late in the season is a mistake. I keep the manure as near the top as possible; but too much manure will produce coarse produce. My Celery never runs to seed nor becomes hollow, but it will make a joint or two, and that is considered the best part of the Celery. I generally plant from the end of May to the second week in June; when I lift the plants from the nursery bed, I dip them in a tub of water; by this plan I get the roots straight, and they go better through the manure. But of course this is immaterial, as the plant will make fresh roots. In The Garden of January 1, a correspondent says:—"Celery, to be of the highest quality, white, crisp, and sweet, should be all blanched at once;" I say no. Earth-up a little at a time, just as the heart grows up, for, when Celery has done growing, there should be no blanching.—James Ramsay, *Retford.*

THE LIBRARY.

SCIENCE PRIMERS.*

A school Primer, written by a President of the Royal Society, is perhaps without previous example. Students may now begin the reading of botany with the aid of a grammar stamped with the highest authority, and may therefore reasonably expect to take their first lessons from a source uncontaminated with the ignorance, errors, and loose expositions which have often infected such books in this as well as in other sciences. But after perusing it, we cannot exempt the present work from a few serious slips, and several cases of careless composition. In order to make it safe for placing in the hands of beginners, the more important mistakes and misprints ought to be corrected; and it is to be hoped that a page of errata will be promptly added. It is surely not a sufficient definition of a Catkin, that it "is a spike that falls away after flowering" (page 46); nothing is said about the flowers being unisexual. Again, it is not customary, though inexperienced observers readily fall into the mistake, to regard the Rose as having a superior perianth; and it is at least questionable whether pappus in Compositæ is itself the calyx, or even the representative of it. On page 108, we find the Buckthorn classed in the Order Celastrineæ, the Laurustinus in the Order Cornaceæ; and on page 110, the Order Betulaceæ is placed amongst the Monocotyledons—all blunders which are not only quite unaccountable, but perilous to the success of the book, and highly dangerous to candidates for examination. The lustrous hue and glossy appearance of leaves, in most cases, is explained on page 7, and again in nearly the same terms on page 43; such a useless repetition suggests want of care in preparation. The lettering of the parts of the figure on page 26 is omitted, leaving the student in doubt and bewilderment; and on page 72 the letters *a* and *b* of the figure are transposed so as to mislead; and, again, the figure of the Fig on page 82 is not magnified like the subjoined figures of the male and female flowers, although both are equally stated to be much enlarged. On page 38 we are told that the Elm increases only by terminal buds; while we cannot agree with the author in this statement, yet we perfectly appreciate and join in the recommendation of the study of the modes of branching of trees as being one full of interest, as well to the botanist as to the artist. "Leafless branches of the common English trees, suspended against a wall, are capital studies for pupils, and reveal characters that escape the observation of teachers whose attention has not been called to them" (page 40). The section on the fruit is concisely and clearly set forth, without the unnecessary complexity and fulness of nomenclature which encumber most, even elementary, manuals; also that on Conifers and Cycads is very satisfactorily given. The book consists of about 120 small octavo pages printed in clear open type, and is illustrated by sixty-eight woodcuts, many of which we remember as having done service in Oliver's "Lessons." At the end of the preface, the pupil is told that, after mastering the contents of the Primer, he may proceed to the use of Professor Oliver's "Lessons in Elementary Botany," which goes over the same ground in more detail. For our part, we see no reason why pupils who intend to proceed so far should not at once begin with Professor Oliver's volume.

Anœslia grandiflora.—A magnificent East Indian plant, also known under the appellation of Acacia grandiflora. It is a miniature of Albizzia Julibrissin. It is extremely prolific, and the lightness and elegance of the flowers are quite out of the common. The foliage, too, is very beautiful, and it is strongly recommended to every one who has a hothouse or even a pretty warm greenhouse.—"Revue Horticole."

THE FLOWER GARDEN.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The bright and warm days at the end of last week induced many blooms to open, but did little to change the backward character of the spring. The snowy-looking dots of the unopened flowers of the Bloodroot (Sanguinaria canadensis) appeared during the week, and where plentiful afford a distinct and pretty effect. The best use for the plant is as a subject for naturalisation on the margins of shrubberies or under the branches of deciduous trees on the lawn, where, when its evanescent floral effects vanish, the blank spaces it leaves when it dies down are not conspicuous. There is also little danger of its being destroyed from digging and planting in such positions. The Snake's-head (Fritillaria meleagris), finest of its race, has also come into flower abundantly during the week. It has very high merit indeed, inasmuch as it is a fitting ornament for borders, bulb-beds, the margins of shrubberies, or naturalisation in grassy places. Some of the varieties are beautifully marked and shaded, so that they please on the closest inspection, while their distant effect growing among the early Grass is charming. The Crimean Iris (I. pumila) has opened its large and richly-hued flowers during the week on the coldest soils round London; it is a very hardy and a very precious plant, and some of its varieties are more beautiful than the type, like very large Orchid blossoms on very dwarf stems. Quite distinct from it is the diminutive Persian Iris (I. persica) with its singular and delicate hues and grateful odour. This is sometimes supposed to be a tender species, but in the Hale Farm Nurseries, where the soil is rather heavy, it is quite hardy, and flowers freely. There is no more interesting rock plant or choice border flower. The winter-flowering Iris stylosa, which Mr. Ellacombe sent us in mid-winter, is this year flowering round London now, and a very lovely spring flower it is. The new Tulipa Greigi flowered during the week in Ware's Nurseries, and a splendid flower it bears, orange-crimson with marbled leaves. The graceful Epimediums, which seldom look happy except in the milder sea-shore or hill districts, show their blossoms half-hidden among the spare foliage which they bear in London gardens; the Rush Daffodil (Narcissus juncifolius) is now in flower; it varies a good deal. The beauty of the earlier Scillas has past away; they are replaced by the faint blue Italian Scilla (S. italica). The old Phlox verna, once very popular in gardens, and worthy to be always so from its neat tufted habit, is beginning to show its rosy bloom. The fairest among the white flowers of the week is the White Buttercup (Ranunculus amplexicaulis), and among the blue the Apennine Anemone (A. apennina), which, like many other flowers, is much later than usual. The blue Gromwell (Lithospermum prostratum) begins to show its Gentian-blue blossoms, and the spring Orobus, some time open, is gradually showing more blossoms on its graceful tufts. Dentaria digitata is in full bloom, a slender plant with a stock-like bloom admirably suited for quiet moist nooks, in half shady places and among shrubs. In the Stock Order we have also among the smaller plants in flower during the week the neat Mountain Alyssum (A. montanum), and the pretty white Cardamine trifoliata. Among the older Tulips there are T. Oculus solis or præcox, and the Wood Tulip (T. sylvestris) and its varieties. The seldom seen and beautiful Pulmonaria virginica is slowly expanding its purplish buds, and the

The Persian Iris.

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* Science Primers. Botany. By J. D. Hooker, C.B., P.R.S. With illustrations. Macmillan & Co., 1876.

Rush Daffodil. Crimean Iris. Spring Phlox. Wood Tulip.

Spring Adonis.

Noble Fumaria. Italian Scilla. Snake's-head. Virginian Lungwort.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Adonis vernalis has flowers open, though the tufts have not yet attained their full splendour. To the same slow-opening and apparently cautious plants belongs the noble Fumaria (F. nobilis) now in flower; the yellow American Dog's-tooth Violet (Erythronium americanum) has been sent us by the Colchester New Plant Company during the week, but we have not noticed it in flower in London gardens.

Primrose "Purity."—Among the richly-hued and prettily-laced Primroses now in our gardens there is enough beauty to make whole parterres gay with these flowers alone. Purity is not distinguished for either its size or richness of colour; on the contrary, it seems the smallest of the varieties of the common Primrose, and it is supposed to be the whitest as yet in cultivation, though the white is only primrose-white after all. It, however, flowers profusely, and has quite a sparkling effect among its kind or among other flowers of the season.—V.

Floral Effects in Norway.—Early in summer, say the middle of June, the country about Trondhjem is of a vivid velvety-green, like that afforded by Moss in this less rainy country. This lovely hue is brightened up by extraordinary masses of wild flowers, among which broad patches of bright colour, furnished by acres of wild Pansies, Ragged Robin, &c., growing in families, are conspicuous. Many of the houses in the country have turf roofs, and the myriads of wild Pansies growing upon them and all looking one way are very striking. Later on in the year I have seen miles of the high fjelds or fells, 1500 to 2000 ft. above the sea, covered with Sundews. I have seen the flora of the Alps in full glow, but, though the species are, perhaps, more numerous, the effect of the masses of flowers is not so striking as in Norway. A grey-bearded Lichen gives a venerable aspect to many of the Pine forests.—P.

Short-leaved Yucca (Yucca brevifolia).—This tree-like species, in its ultimate floral growth, or final expansion into its flowering state, attains from 10 ft. to 30 ft. in height, and from 8 in. to 2 ft. in diameter; bark thick and rough; branches from 3 ft. to 6 ft. in length; leaves short, narrow, and dagger-like, crowded at the ends of the branches, and having finely saw-toothed edges; the masses of white, nodding, Lily-like flowers are closely set at the ends of the branches. At first this plant has only a radiated cluster of short root-leaves of from 4 in. to 6 in., so that it occupies but a small space of ground. This will prove one of the most ornamental and desirable of Yuccas. The fibre is said to be as fine as silk and very strong, readily taking the aniline colours. This class of liliaceous or aloetical plants very providently store up their treasures of starch and sugar to a great amount preparatory to their flowering and fruiting, which, for the most part, is every other year. The large, vigorous, and tender flower-stem buds are often cut off at an early period of growth, and roasted or boiled by the natives as a delicious dish. Dr. Palmer has observed that this plant, having once set its heart on blooming, is not so easily baulked by the hand of man. Being decapitated the parent plant bequeaths the acquired fortune to the eldest plantlet previously provided for an emergency, and the heir takes up and carries out the last will and testament of the departing parent, prematurely blooming in its stead.—A. Kellogg.

Flower Gardening in Norway.—This is not much pursued in the north of Norway, so far as outdoor gardens are concerned, and the window conservatories are the only ones known. The climate forbids the cultivation of any but the hardiest outdoor flowers; but Roses on their own roots are plentiful. I was much surprised, however, to see Dielytra spectabilis coming up in June in a garden as far north as Hammerfest. Hammerfest is in latitude 70°, and the most northerly town in Europe. On the hills behind it the Silver Birch creeps along the ground, almost like Ivy; and the natives say that they have eleven months of summer and one month that is not summer. Flowers are a passion with the northern Norwegians, and it is touching to see how their climate teaches them to love them. Failing flowers, in some of the houses it is customary to strew fragrant Fir tips about the floors, and I have also seen them strewed in the path of a funeral. Flowers, either in pots or in vases, are often placed on tombs in the churchyards.—P.

Three Good Daffodils.—Narcissus bicolor, N. Horsefieldii, and N. Empress, all of which are now in bloom, are three of the best of the large yellow-cupped kinds. The perianth segments are white, and the cups a rich golden yellow as bright as that of an Allamanda. These are three of the most distinct and beautiful of all the N. Pseudo-Narcissus or Daffodil section, and ought to find a place in every garden.

According to Mr. Schawrz, of Lyons, between 5000 and 6000 varieties of Roses have been named and catalogued.

THE FRUIT GARDEN.

WALL TREE PROTECTIONS.

The early season at which our choice wall fruits naturally come into flower renders the protection of their blossoms from injury by frost an important point in their cultivation. The present season has been well calculated to prove the relative value of the various kinds of wall tree protections in general use, as upon several occasions since the earliest blossoms of Apricots and Peaches expanded, the thermometer has denoted from 10° to 12° of frost, an amount which any one conversant with plant culture must know is sufficient to penetrate a well-glazed house, and greatly affect the inmates, even if they are far removed from the glass, unless artificial heat is applied. Under such circumstances it would require a considerable stretch of the imagination to suppose that any kind of coping could alone ensure protection sufficient to guarantee the safety of the crop. Yet we often see it stated that certain widths of projecting glass or other movable coping are sufficient protection against any amount of frost; but in what way copings retain heat better than a close-glazed roof I am at a loss to discover, and fear that those who rest their hopes of a crop on coping alone will have little use for the fruit-basket, *i.e.*, if their trees, when in full bloom, be exposed for several hours to a temperature of 20° Fah. On March 19 I saw such hardy foliage as that of the Christmas Rose lying prostrate on a well-sheltered border, under a projecting roof wider than those often employed for fruit tree protection. I have no wish to undervalue the protection afforded by copings in connection with a really efficient covering in the shape of blinds, fish-nets, or other contrivances of that kind, but I do think that the true value of a form of protection that can only end in failure, except on occasions when no protection is required, deserves to be pointed out. My own idea is, that the wall itself is the best protector, and that the closer the young bearing wood is trained to the brickwork the better. Copings and movable blinds are serviceable for keeping off storms of snow and hail, and also for mitigating extremes of temperature; they should therefore be used judiciously day and night, for, when thoroughly dry, several degrees of frost are required to destroy the blossom; whereas when wet a slight amount of frost is sufficient to complete its destruction. Something may also be said as regards the aspect of walls for trees, and the advisability of having a portion of both Peach and Apricot trees on other aspects besides a full south one. With us Apricots do well on a west aspect, which not only prolongs the season of ripening but also retards their flowering; those on south aspects being in full bloom during the severest frosts, while those on a west aspect are only just commencing to expand. It should also be borne in mind that west aspects receive the greatest benefit from the sun's rays late in the evening, and that a greater amount of latent heat is given out during the night, and that after a frost the sun's rays do not shine on the trees until the middle of the day, so that west aspects are not subject to such violent transitions as south ones—transitions which are even more destructive than severe frost. When movable blinds are employed, they should not be drawn up immediately after the frost disappears, but should be employed to mitigate the sun's rays until the day is well advanced. By careful attention to these apparently trifling matters, a crop will not only be secured, but the health of the trees will be ensured. J. Groom.

Henham.

PROGRESS IN FRUIT CULTURE.

Our young contemporary, the "Nord Est," a horticultural monthly which appears at Troyes, publishes an article on this subject in its issue for the present month from the pen of Dr. Pigeaux. Fruit culture, says the doctor, has in our day made real and incontestable progress. Without going back to the time of the Valois, or even to the time of Louis XIV., whose table was often worse provided with fruit than that of the ordinary amateur of to-day, it cannot be denied that our present supply of fruit is utterly inadequate to our wants. Unfortunately, the tendencies of cultivation, as applied to fruit growing, seem to lag farther and farther behind the end to be aimed at by trying to produce fruit of exceptional size, and of a price which can rarely be remunerative, high as it undoubtedly is; but fruit culture, as adapted to the wants of the age, ought to seek to produce fruit of moderate size in sufficient abundance to suit moderately filled purses, by furnishing to commerce a certain quantity of early fruit, a large supply of fruit in proper season, and a still larger winter stock. What is necessary to supply this pressing want? First of all, we must make the very utmost of all the fruit trees which we cultivate at present in such large numbers. In order to arrive at this result, we must plant them farther apart than we do now, and absolutely proscribe the system of oblique cordons placed at the distance of only a few feet. We must also abolish the method of growing fruit trees in the form of spindles, pyramids, &c., which only serve to amuse children; but it is to be feared that these practices have laid too firm a hold on our fruit growers to be easily eradicated. They now practise these methods of training to show their talent; in a few years hence they will only be found in schools, where they will be exhibited for the sake of pointing out their defects. The desire to grow fruit of excellent quality, and of beautiful form and colour, and above all, to have trees that will bear early, has caused the almost universal rejection of natural stocks, or grafts on natural stocks, which is one of the weaknesses of modern fruit growers. Without totally rejecting the system of grafting on the Quince or paradise stocks, we must, for market supplies, come back to the free stock. With proper pruning and training a tree on the free stock can be made to bear in six years, and sustain its powers of production of fruit for half a century at least, while grafting it on its congener gives trees which only bear during some five-and-twenty years. Without old trees we cannot have fruit that will keep and export well. We have been following a wrong tack, and it will be both wise and profitable to adopt a more rational practice. In the culture of free stocks, it is indispensable not to plant them in soil having only a depth of 15 in. or 18 in. Good vegetable mould, 3 ft. or 4 ft. in depth, is not too much for a fruit tree which is to live and bear for, let us say fifty years. With vigorous trees to choose from, trees that have not been enervated by too early production, that have come of a good stock, and that have been properly pruned, of a good form, with plenty of room for the passage of the air, we may count on a sufficient and lasting yield, which is, after all, the most desirable point. Experience has shown that fruits with pips will not flourish in certain districts, while stone fruits on the contrary succeed admirably. Now-a-days, no one in their senses would plant Chestnuts in calcareous land on which the Walnut seems to thrive and attain enormous proportions. A grave error, which cannot be too clearly pointed out, consists in giving the worst part of the land to fruit tree growing, the best portion by far being devoted to flowers and vegetables. In a poor soil trees soon degenerate, and the most careful culture will not suffice to maintain the production of fruit at its proper level. The clever Montreuil growers know only too well the value of the town manure which is consumed there to neglect the use of such an aid. Fruit growers will do well to imitate them, and above all to match as they do the adaptation of the different varieties of fruit to the peculiar qualities of the land they cultivate. We must resist the temptation to introduce new varieties of fruit trees into a plantation, except indeed as an experiment. For a similar reason we must avoid the worthless varieties which our forefathers planted in their ignorance of what was really good. Ground taken up by worthless trees is simply a continual source of loss.

In virtue of the principles laid down above, we deprecate the system of cultivation which only allows of trees being grown which are cared for by trained cultivators. One of the complaints to be urged against modern fruit growers is evidently the system of pruning at present in vogue, and which has been carried to an extreme by the majority of those who practise it. To such a pitch has pruning now arrived, that it is held to be synonymous with cultivation. We frankly declare that this assertion is erroneous. A properly pruned tree, that is to say, pruned with knowledge and circumspection, of which our best practitioners give every proof, ought easily to satisfy the wants of all amateur cultivators, but in the hands of unpractised or amateur growers it may be affirmed that it will never return during the whole of its short existence, the half of the sums laid out upon it. What fault could we not find with the system of reversing the natural order of vegetation by curving the branches downwards towards the soil, of the grafting of fruit buds, of the cutting of leaves, and of the twisting of shoots. These modes of procedure are looked upon as constituting a real progress in fruit culture, but, on the contrary, they are a mistake. Without in any way wishing to abolish amateurs' small gardens, let us make the cultivation of fruit what we have already made the cultivation of the Vine, and let us no longer be afraid of devoting the best part of our land, even of our corn-growing districts, to the growing of fruit. It would soon become largely remunerative. But it must not be thought that it is only necessary to cover large surfaces of land with fruit trees well fitted for the particular soil and climate of the locality chosen, and then fold our arms and trust in Providence; far from it, for an orchard of only a few acres requires the assiduous care of an experienced and laborious cultivator. The management of a good orchard, including the gathering and the storing of the fruits, the packing and transport at the proper time to those parts of the country which require them, is certainly no sinecure, but an occupation worthy of a man of enterprise and intelligence.

FRUIT CULTURE IN KITCHEN GARDENS.*

In growing fruits I do not condemn the system followed in market gardens—quite the contrary, but that system cannot be carried out successfully in private gardens, from which vegetables are expected to be supplied all the year round. In most cases kitchen gardens are planted with trees in rows, between which vegetables are grown. If the gardens have boundary walls, that having a south aspect is generally planted with Peach, Nectarine, and Apricot trees. I train my Peaches and Nectarines on Seymour's plan. Let us begin with a maiden tree planted when the leaves begin to fall; the ground is then warm, and it will make roots, and get established before winter. As soon as the buds begin to move the following spring cut the shoots back to three eyes, and when broken train one young shoot to the right and another to the left horizontally, leaving the centre one perpendicular. About June the centre shoot should be stopped, which will then strengthen the side shoots. In the spring following cut the upright shoot again back to three eyes, retaining one additional shoot on each side. By cutting back from year to year the requisite number of shoots is obtained to complete the tree. As regards summer pruning, as soon as the trees make shoots about an inch long, disbud or thumb-prune them by taking off all the young shoots where there is no fruit, except the lowest one upon the bearing branch, and that at the extreme point of it. This end shoot is allowed to grow about 3 in., and is then stopped; and the buds by the fruit are all broken off to about four of their bottom leaves, so as to make a cover for the young fruit until the time of thinning, when those little spurs are taken away—that is, such as are not wanted, and the others are retained with the fruit that is left. Thus we encourage the growth of the shoot for fruiting next year, and no other. All shoots on the lower sides of the branches should be rubbed off. Morello Cherries require similar treatment. They are generally grown on a north wall, but standards planted in rows also do well along with other trees. When in fruit they must be netted.

Pears may be planted against an east wall, and Plums on one facing the west. I prefer horizontal training in the case of Pears. If the young tree be what is termed a maiden, cut back to three eyes, train the shoots—one right and the other left, and one upright. The second year cut back the leader to about 11 in., so as to induce a break about 9 in. from that of the last year, still keeping an upright shoot for the stem, and rubbing off it all eyes, except those required for shoots, so that the tree may have a clear 9 in. of stem between every tier of branches. When fully established, summer-prune the top part of it first, say to the extent of about one-third. In about a fortnight give a second pruning, and in a fortnight after that clear the bottom or third part. This helps to strengthen the bottom part of the tree, which is invariably the weakest. Should the trees be unfruitful, root-prune them, more particularly the tap-root. Plums may be trained horizontally, or on the fan system. One thing is important, *i.e.*, if a good fan-shaped tree be required, and that is, it should be headed back sufficiently to get the requisite number of shoots, for if allowed its own way too long, great difficulty will be experienced in getting it again into good shape. Apples in rows, to be trained as espaliers, require about the same treatment as Pears on the walls trained horizontally. Sometimes they are trained in the form of a goblet, a method which keeps the centre open. The branches should stand about 9 in. apart and should be spurred-in every year, thus forming a thrifty tree. Another method is the bush system of growing them; let them be thinned sufficiently to keep the branches from crossing each other, and spur them annually. Thus treated they make neat compact trees. For Plums the bush form is best. Where Pears are planted in open quarters I prefer standards with their branches bent down; this can be done by fixing an iron hoop at the bottom, and tying the shoots down on it with a piece of string. Young trees often grow very vigorously, which they may be allowed to do until a sufficient quantity of branches has been secured; after which, if the tree proves unproductive, it must be lifted, and, after carefully pruning the roots, re-planted. Another way of restricting the growth of a too vigorous young tree is to dig well under it and cut the bottom roots; in fact, all trees that are to be kept within certain limits by pruning and training, cannot have too great attention paid to the state of their roots. Where the ground is suitable I prefer free stocks; some like the Quince stock for Pears, but if they are grown on free stocks and have the same attention paid to their roots as to their branches, good crops of fruit will always be obtained; and, when the trees have acquired a good fruiting condition, manure, applied both in a liquid and solid state, will add to the size of the fruit. Apricots, with the exception of situation, require similar treatment to Plums.

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* Read by Mr. Roser at the Wimbledon Village Club Gardeners' Society, March 24.

Birds and Gooseberry Buds.—During the period snow was deep on the ground the birds picked all the eyes from the shoots of my Gooseberry trees, and the result is long shoots, perfectly bare of both leaves and fruit; under the circumstances, what is best to be done—should the shoots be cut back to one eye, or, should the whole shoot be removed? As I cannot net my trees, what is the best way to protect the buds in winter? The birds perfectly swarm here, and as to scarecrows they attract them rather than frighten them, as they seem to know their presence indicates food.—Hereford. [Birds have been more than usually destructive to buds of Gooseberry and other fruit trees this winter. As the bushes in question have sustained so great a thinning, the shoots should be pruned back to any eyes left to induce the trees to make strong growths for another year. A mixture of soot, quicklime, and a little clay—the latter to make it stick—should be applied to the bushes in the autumn by means of a syringe or garden engine. Birds dislike buds after doses of this kind. Another great point is never to prune the bushes in the autumn, but, on the contrary, to leave all the thinning or shortening of the shoots until spring, when any great danger from birds or spring frost is over. I have followed this plan for many years with success. —William Tillery, *Welbeck.*]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

A Green Currant.—Black, red, and white Currants are known to all, but I have also seen a number of green Currants. They occurred in the garden of the Leusmand, or local representative of justice at Visnaes on the Nord-fjord in Norway. The fruit was quite ripe, and tasted like a black Currant. The time was about the middle of August.—P.

Fruit Prospects in Cornwall.—Fruit trees and bushes are unusually well furnished with bloom this year; Plums and Pears are uncommonly full; Apples have abundance of unexpanded buds, and bush fruit of all kinds is very promising. We experienced 7° of frost in March, and had some exceedingly rough, cold winds, accompanied by hail and snow. The weather is now, however, mild and spring-like, and vegetation is moving.—H. M.

PLATE XVI.

A NEW EUCHARIS.

(EUCHARIS CANDIDA.)

Drawn by H. HYDE.

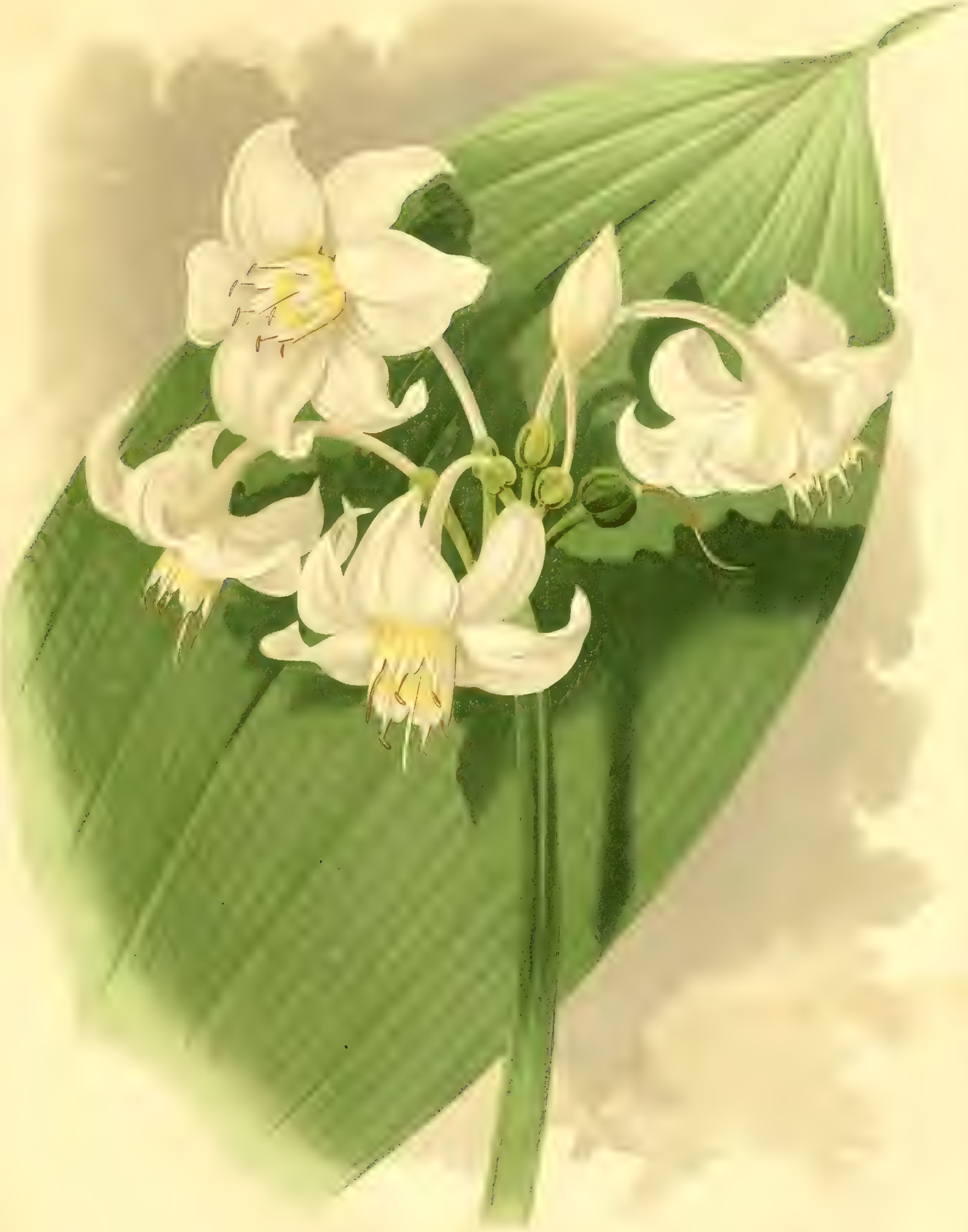
The Amazonian, or large white-flowered Eucharis, has become so popular in our gardens, and so eminently satisfactory in almost every way, that we had scarcely hoped to have had to welcome such a graceful and desirable allied species as that which we now figure for, as we believe, the first time in this country. This new Eucharis is a native of the United States of Colombia, from whence it has been quite recently imported to this country by Mr. W. Bull, in whose Nursery, at Chelsea, we saw it flowering freely in February last. Its bulbs are longer in shape than those of the Amazonian species, and the foliage is also longer, and of a brighter green colour. The flower-scapes vary from 16 in. to nearly 2 ft. in height, and are terminated by an umbellate cluster of from three to seven flowers, and about as many short membranous brownish bracts. The individual blossoms measure about 2 in. across, the perianth segments being pure white, and gently reflexed, as shown in our plate. The corona is smaller and narrower than that of the older species, and tinged towards its base with yellow, whereas in E. amazonica it is greenish. Its slender growth and narrow, reflexed, perianth segments, at once distinguish it from its allies, and as it grows and blooms freely, and is of equal duration under the same conditions as the other species, it will prove of great value, not only in the way of furnishing cut flowers, but for decorative purposes of other kinds; and, since its blooms have none of that florist-flower-like stiffness which characterises those of the older species, they will form an agreeable variety. This Eucharis is, as will be seen from our plate, quite distinct from a plant sometimes grown in gardens under the name of E. candida, but is evidently the same as that figured in "Flore des Serres," vol. viii., t. 788, under the same name. Our plate well represents the graceful contour of the plant, which, when it becomes more plentiful, cannot fail to rank among the most chaste and useful of all white-flowering plants. B.

The New Vegetable Market in the City.—The preliminary works for this new Market to be erected by the Corporation on the vacant land between Charterhouse Street and Snow Hill, and adjoining the new Poultry Market, are, says the "Builder," actively proceeding. The building is to be uniform in its external features with the two markets already erected, and will extend on the south side in a westerly direction to Farringdon Street, in a line with the south boundary of the Poultry Market. The new Market will occupy an area of upwards of 2 acres in extent.

The Brussels International Exhibition.—The order of proceedings at this great show is arranged as follows:—Friday, April 29, at nine p.m., Official Reception of the Members of the Jury and of the Botanical Congress in the Hall of the Hôtel de Ville. —Saturday, April 30, 9.30 a.m., Meeting of the Jury at the Exhibition in the Plan du Petit Sablon. In the evening, Meeting at the Cercle Artistique.—Sunday at noon, Formal Opening of the Exhibition; Spectacle at the Théâtre de la Monnaie.—Monday, May 1, at ten a.m., Opening of the Congress; at 6 p.m., Grand Banquet offered by the Flora Society to the Members of the Jury and the Congress.—Tuesday, Continuation of the Congress.

The Question of Names.—We notice that the "American Naturalist," a periodical written by the ablest scientific men, makes a much-needed remark on the question of scientific names. In reviewing a first book of zoology, by Professor Morse, it says:—"The objects are called by their common names. The author has had the good sense to omit the scientific names, thus rendering the book vastly more attractive and useful. Many readers are anxious to first learn the Latin names, and are too often content to stop there. The scientific name is a thing of the least importance." There is no doubt that the progress of knowledge in plants, too, has been sadly impeded by presenting beginners with a number of hard words at first.

Mr. Ruskin, according to the "Sheffield Independent," was lately asked to preside at the opening of the Exhibition of the Sheffield Society of Artists, but declined to do so, stating that no artist worth sixpence a-day would consent to live in such a town beneath a canopy of smoke, and no lover of art would take up his abode there for a million a-year.



TREES AND SHRUBS.

THE WALNUT AND ITS VARIETIES.

To the superficial observer there is, perhaps, no fruit that promises so little choice in the way of colour, form, and size as the Walnut, but an examination of the following varieties will show that, even amongst the members of this apparently restricted class Dame Nature has indulged herself once more in that love of change to which we owe so many of her most charming productions. The Walnut family, Juglans regia, properly so called, may be divided into two groups, the Walnuts proper and the Caryas, which latter, by the way, only differ in some of their secondary characteristics from the first. The genus Walnut contains two species, Juglans regia, which produces all the edible varieties of Walnut, and Juglans nigra, generally called the American Walnut, with which may be associated the Juglans cinerea and Mandschuria, which are only varieties.

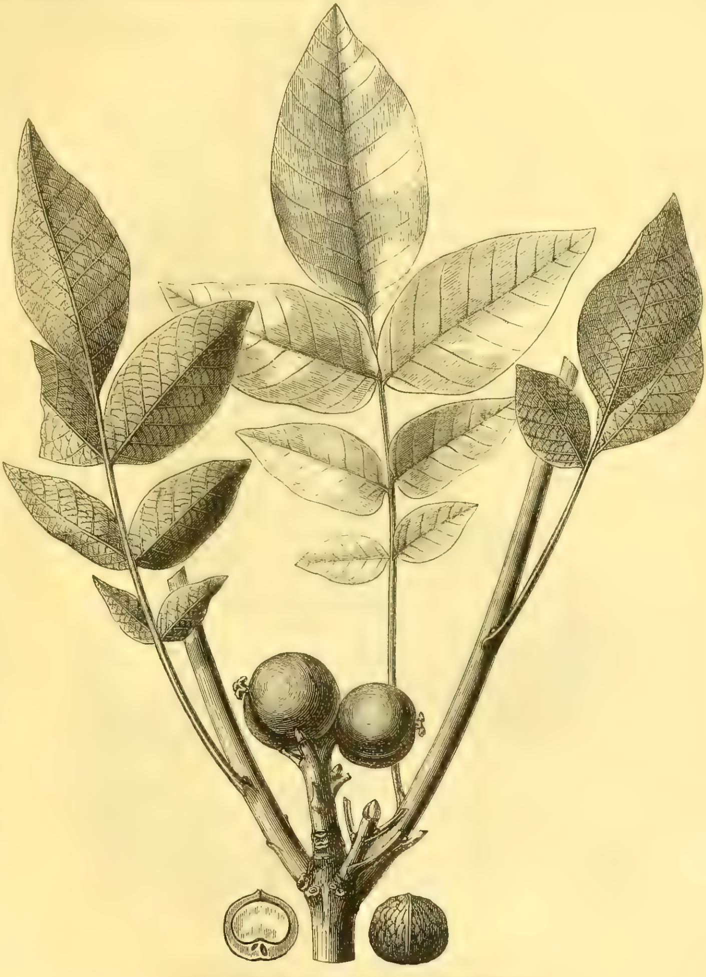


Fig. 1.—Small-fruited Walnut (Juglans regia microcarpa).

Let us take the smallest variety first. The Juglans regia microcarpa is represented in its natural size in fig. 1. It is a small tree with spreading branches and compound leaves, imparipinnate, with from seven to nine oval elliptical and sessile leaflets, entire, pointed at the top, and sometimes cusped. The fruits are spherical, and from $\frac{1}{3}$ in. to $\frac{1}{2}$ in. in diameter; when covered with the rind they are terminated by a pretty large persistent style. The outside of the shell is slightly sinuous or almost smooth, and the cotyledons very large in proportion to the size of the entire fruit. They are of a more delicate flavour than those of the ordinary Walnut. This variety is remarkable from several points of view. The general aspect of the tree reminds us of certain species of Pterocarya, especially Pterocarya caucasica. The size of its fruit, too, separates it widely from all known species, being less than that of many varieties of Nuts. When mixed with other varieties of widely different shape and size it forms an interesting addition to the dessert-table. When mixed with ordinary Nuts it is hardly to be distinguished from them, except by the shape. As a fruit tree the Juglans regia microcarpa has its points of scientific interest. Differing, as it does, from all known varieties, it shows how a single species may vary, and we are convinced that it is only a variety of the cultivated Walnut; for, if we raise it from its own seed, the results, in the majority of instances, revert to the ordinary type. The Juglans regia microcarpa shows that a certain type being given, it is extremely difficult to fix its exact limits, and experience teaches us every day that in practice we are continually obliged either to extend the characteristics which we at first assigned to the type, or else to form secondary types, which will group themselves round the old one, and which themselves even may form the starting-points of fresh varieties. Going still further, but still confining ourselves to the Juglans regia, we find numerous varieties, some differing in shape, others in size, others in the nature of the kernel, the hardness and smoothness of the case, or difficulty with which the two halves of the shell can be separated, &c.

One of the varieties, which is most opposed in size, shape, and general character to the small species which we have just described, is the Juglans regia gibbosa, or Gibbous Walnut (figs. 2, 3, and 4), a vigorous tree with a straight stem, covered with an ashy grey bark. The branches are thick with the bark of a shiny surface, and of a ruddy brown hue speckled with elongated grey striæ. The buds are large and spherical. The leaves are composed of five pairs of leaflets, the top being the longest. The leaflets are oval, obtuse, coriaceous, entire, not dentated, shining, slightly bulged on the upper surface, the under surface being pale, principally on the veins, which are of a reddish yellow, and are provided at their intersection with the mid-rib with a little tuft of yellowish red hairs. The fruit is sessile, or very slightly pedunculated (fig. 2), the rind being thinnish and marked towards the base with ashy-grey elevations, which, towards the top of the fruit become so crowded together as to give it some resemblance to Juglans nigra. Here and there, particularly at the sides, the fruit shows a number of gibbous elevations, which at the top are prolonged into a well-defined cone. The shell is thick, hard to the touch, and strongly corrugated, on account of the deep depressions and elevations presented by its surface. The flavour of this Walnut is excellent, and the kernel is easily extracted from the shell; but, like all hard species, the shell is thick, and there is an inner deposit which considerably reduces the size of the kernel, as will be seen from the section fig. 4. In spite of this drawback, this variety, from its large size and corrugated appearance, makes an effective fruit for the table, especially when mixed with its smaller and smoother congeners. On the left hand side of fig. 4 we have inserted a representation of the top of the fruit of Juglans regia microcarpa, showing that this characteristic is quite distinct in the variety we are describing. The Juglans regia gibbosa presents another characteristic in the insertion of its fruit, which appears to be a speciality of this variety. The fruit, instead of growing upright, or, at any rate, horizontal, is always more or less pendulous whenever it is solitary.

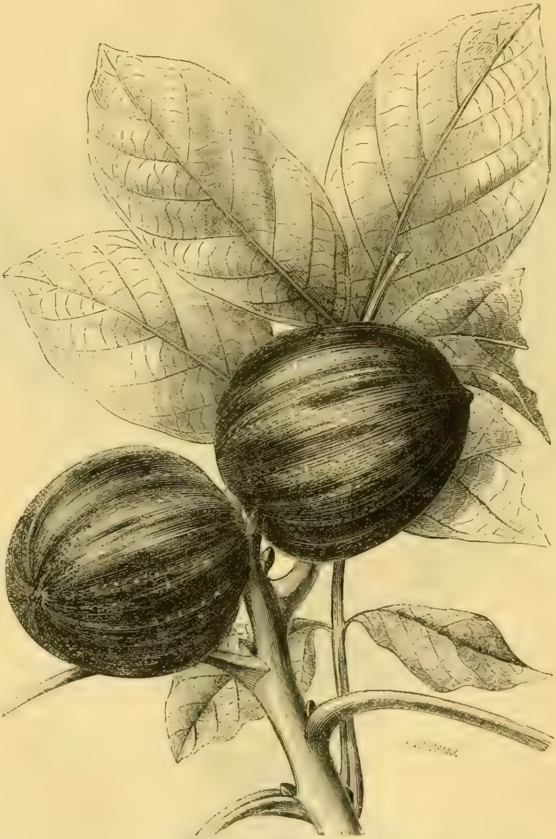


Fig. 5.—The Variegated Walnut (Juglans regia variegata).

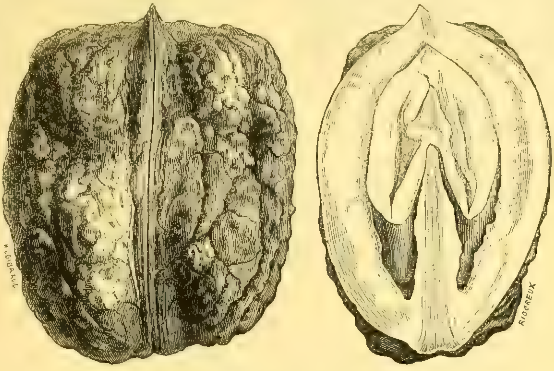
The next variety is the Juglans regia variegata (fig. 5), a tree of a vigorous habit, the young branches being covered with a dark green bark spotted with grey, and often striped longitudinally with yellow. The leaves resemble those of the common Walnut; the fruit is of a light yellowish-green streaked with darker green, and reminds one closely of certain varieties of Pears which, in common with this variety, frequently have their young branches striped in a similar manner. In order to preserve the peculiar characteristics of this variety it must be propagated by grafting or layers. Fig. 6 represents the fruit and leaf of the Juglans regia Barthereana, which is remarkable for the form and, above all, for the extreme length of its fruit. The kernel, which is large for the size of the fruit, is of an excellent flavour, and the shells are thin and easy to separate. It is, in fact, a good variety, which deserves to be very much better known. It is named after M. Barthère, a horticulturist of Toulouse, who accidentally discovered it growing amongst a number of other trees; its origin, consequently, is a mystery. According to M. Barthère it is very prolific, and grows easily from seed. The seedlings begin to bear fruit very early, and are ready for grafting when four or five years old. The difference presented by the leaves when compared with those of other varieties is sufficiently marked. The leaflets are thin, soft, and flat, their points being long and acuminate, so much so as to be almost cuspid. Other things being equal, the size of the leaflets is longer in this than in the other varieties of Juglans regia.

The Juglans regia olivæformis (figs. 7 and 8) is a robust and prolific tree, closely resembling the common Walnut in its general aspect, as well as by its wood and leaves, and by the odour they emit, differing only from the typical variety in the fruit, which are generally extremely small, being only from ½ in. to ¾ in. in diameter when denuded of the husk, and but little larger before it is stripped off. When in the outer envelope the fruit presents the appearance of an Olive, whence its name. The shell is so thin that it yields to the least pressure, and is even sometimes absent on each side of the top of the fruit, as shown in fig. 7. The kernel, which fully fills the shell, is delicious. As far as the fruit goes, it closely resembles that of the Juglans regia microcarpa both in size and general characteristics, but the aspect of the tree and its foliage are quite distinct, and are exactly similar to those of the common Juglans regia, the variety we are describing having very small branches, and comparatively enormous leaves.

There are two other varieties of the Walnut which are somewhat peculiar, the Juglans regia preparturiens and the Juglans regia serotina (fig. 9). The former variety is precocious on account of the singular and exceptional fact that it is born almost an adult, in fact, it is nothing uncommon to see a tree in its third year bearing excellent fruit. The second—Juglans regia serotina (fig. 9), or the Late Walnut—is peculiar for its combined lateness and earliness, two opposite qualities seldom found in the same individual; for, although it develops its leaves, and consequently its fruit, a full month later than the ordinary Walnut, the fruit ripens exactly at the same time as those of the last-mentioned variety.

The Juglans regia cordata (fig. 10) is another variety that merits notice from the peculiar form of the nut. The general appearance and foliage of the tree closely resemble those of the ordinary kind, and it is not until the fruit arrives at maturity that any difference is perceived. The fruit is heart-shaped, and is flattened in the opposite direction to the suture, which juts out like a flange all round the nut in the direction of its largest circumference. The kernel is of excellent quality, and the shell is pretty thick and solid. This variety is due to M. Charles Dupuy, of Loches (Indre-et-Loire).

The following Walnuts are much grown in the south of France. The Noix St. Jean and Chaberte (figs. 11 and 12) which are cultivated for the sake of the oil contained in the kernel, and the Noix Mayette, Parisienne, and Franquette, (figs. 13, 14, and 15) which are grown for the table. They are all varieties of the common Walnut, which they closely resemble, and do not, therefore, call for any special description.



Figs. 2 and 3.—Juglans regia gibbosa.

We now come to several varieties which merit our attention from a scientific point of view as occupying a position midway between the two typical species of the genus—Juglans regia and Juglans nigra, the former being Asiatic in its origin, the latter American. Leaving our readers to draw their own conclusions from the facts adduced, we commence with the Juglans intermedia quadrangulata (figs. 16, 17, and 18), a vigorous tree relatively low in size, in consequence of the branches spreading nearly horizontally, and having very few ramifications. The wood and bark resemble those of the common Walnut. The leaves are very long, attaining a length of 15 in. or 16 in., and even longer. The leaflets are thin, tender, denticulated, strongly veined and reticulated, sharply acuminate at the top, and of a light or yellowish green. The fruit (fig. 16) is disposed in bunches, or rather in an upright spike, on a peduncle, which elongates and becomes ultimately pendent through the weight of the fruit. When young the fruit is somewhat angular, and entirely covered with stiff reddish hairs, and is surmounted by a well-developed bifid style, which is somewhat persistent. As the season advances, the angles become more marked, and by the time that the fruit has reached its full size they become sensibly rounded and the surface becomes rough from the remains of the bases of the hairs which are left behind. On taking off the rind the shell is found to be covered with irregular thorns, reminding one of the fruit of the Juglans nigra. The shells are just as hard and as difficult to separate as those of the last-named species, which it also resembles in the kernel being inedible. The origin of this variety is interesting. M. E. A. Carrière, of the Jardin des Plantes, having made a sowing of the seeds of the Noyer de Montbron (Juglans regia heterophylla), three of the plants differed most notably from the rest. As they arrived at maturity their characteristics became more marked, and so much resembled those of the Juglans nigra that several botanists came to the conclusion that some of the seeds of this variety had been mixed with the others. M. Carrière, however, dug round the trees, and luckily found the Walnut shells still adhering to the root, leaving no doubt whatever that the new variety had sprung from seed of the Juglans regia heterophylla. There are several other examples of this intermediate variety, two of which we will proceed to describe.

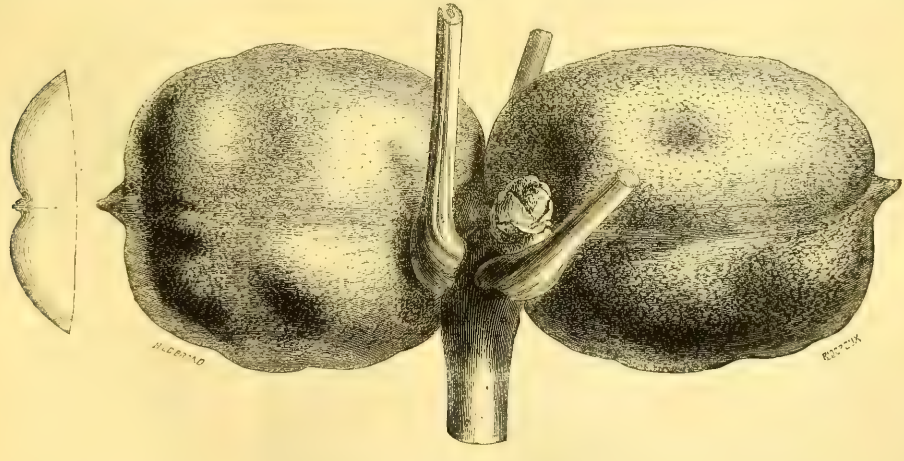


Fig. 4.—Juglans regia gibbosa.

The Juglans regia octagona (figs. 19 and 20), or Mandschurica of M. Carrière, is another Walnut which is remarkable for the deviation of the shape of its fruit from the ordinary type. As its name implies, the surface of the shell has eight angular projections, with corresponding depressions between them. The hollows are rough and corrugated, giving the shell an appearance similar to that of the Juglans nigra. A section of this variety is shown in fig. 19. The shells, although very hard, open readily. The section (fig. 19) shows that the shell, which is very thick, folds as it were on itself, and projects into the interior, forming a deep cavity on each side, while at the top the part constituting the cotyledons may be said to have hardly any existence. Again, the interior of the shell which touches the kernel, instead of being more or less rough, is smooth and even polished, a characteristic which seems to indicate a near approach to Juglans nigra, and, like Juglans intermedia, giving it the right to be considered a kind of link between the two species. Instead, however, of being a native of America, like Juglans nigra, it belongs to Asia, like the ordinary Walnut. It is a curious fact that it not only approaches Juglans nigra in its general appearance, but its habitat is on the easternmost border of the Asiatic continent.

The Juglans intermedia pyriformis, as its name implies, bears Pear-shaped fruit. The shell of this variety is very hard, of a greyish brown, and in its general characteristics resemble the Juglans nigra even more closely than the last named variety.

The woodcuts illustrating this article were purchased from the "Revue Horticole," to which we are also indebted for much information on this interesting subject.

Slow Tree Growth.—At a recent meeting of the St. Louis Academy of Science, Dr. Engelmann exhibited a section of the trunk of Juniperus californica, which was not quite 4 in. in diameter, and yet showed an unmistakable age of 127 years, each ring being on an average about one-fifth of a line wide. The largest growth in ten years had been about 4 lines, the smallest during a similar period about 1½ line.

End of a Celebrated Tree.—The traveller visiting the village of Lenns, in Hainault, Belgium, has always had pointed out to him an old Linden tree, on the plain where the great Condé won the famous battle of the 20th of August, 1648. A marble column well known to tourists was erected close to it, bearing an inscription by Boileau, beginning, "It was here, great Condé, that thy arm made the Rhine, the Estcault, and the Ebro tremble." The historical Linden is now no more; it was torn up by the late tempest that passed over the country. An iron railing has been erected around its remains to protect them from the hands of the curious.

Berry-bearing Aucubas in London Gardens.—I have noticed a great many stray Aucuba berries on plants in the front gardens in the neighbourhood of Putney this year. A friend also tells me that he has, to his surprise, found a considerable number of berries on a plant in the back garden attached to his house. Another friend fertilised a plant artificially two years ago with bought pollen without any good results. This year he was surprised at finding berries on his plant, which he put down to his previous fertilisation, till I pointed out the numerous berries scattered about here on plants on which no artificial fertilisation had been attempted. Aucuba pollen is not, I should say, carried by bees, judging from the look of the flower and its inconspicuous appearance, but by the wind, and I imagine that the stray fruiting of old female plants can only be due to the increase in the number of male plants and to the pollen being thus drifted about.—P.

New Light on Transplanting Trees.—For many years I have had the transplanting of a great number of large trees annually, and such trees were generally dug round and prepared for transplanting several years previously, under the conviction that their future success would be thereby promoted. Within the last few weeks, however, I was induced to look carefully over all the large trees thus removed, and was not a little surprised to find that those trees dug round and lifted the same season, and generally the same day as dug round, were growing better than most of those that had been previously prepared. The only principle upon which this can be accounted for is that the one check, sudden though it be, is less injurious to the trees than the two lesser checks, with an interval between. If a tree in full vigour of health be dug carefully round, growing upon a dry open soil, and removed forthwith to other suitable soil and set, the roots cut, bruised, and mutilated though they be, will heal up and recover better than if the operation had been performed at two separate periods, as commonly practised and generally recommended. The next important matter to attend to is that of fixing or sustaining the trees against the winds, and for this purpose, after trying many expedients, I find stones laid over their roots the best. If the top be heavy it may require two or three tons of flat stones to sustain it properly, but less if the trees be smaller. In placing the stones care must be taken to preserve 3 or 4 in. of clear space between the stones and the tree, otherwise friction might fatally injure them. In addition to adding momentum to the roots of the tree, the stones preserve moisture and keep out the drought. I have scarcely ever seen a tree fail in producing satisfactory results of growth where stones were judiciously and properly laid over the roots. The best size of trees for transplanting for immediate effect are those between 20 and 25 ft. high, and otherwise proportionable in stem, root, and branch. Trees of this size succeed at least equally well with those which are smaller. Elm, Lime, Sycamore, Ash, and Oak are the safest species to remove, and the work may safely be carried out at any time between October and April, both inclusive, but autumn planting is withal most successful.—C. Y. Michie, in "Gardeners' Chronicle." [Mr. Marnock has recently made extensive transplantings of deciduous trees in August with perfect success.]

Alcock's Spruce.—Instances are constantly occurring to prove that Japanese Conifers are, as a rule, hardy. One of the newer and most beautiful species from Japan is the Abies Alcockiana, or Alcock's Spruce. The peculiar tint of its foliage at once stamps it as entirely distinct from any other species, as the upper sides of the leaves present a golden tinge, while the under portion is silvery. In the Island of Nippon, whence it comes, it forms a tree nearly 100 ft. in height, growing on the mountain sides at about 6000 or 7000 ft. elevation.

Evils of Thick Planting.—If we wish trees to be firmly rooted (says Dr. Balfour in an address to the Scottish Arboricultural Society), we must allow the branches to spread freely. When they are so planted that the branches and leaves of contiguous trees do not interfere with each other, and thus all parts are exposed to air and light equally, the roots spread vigorously and extensively, so as to fix the plants in the soil, and to draw up copious supplies of nourishment. But in crowded plantations, where the branches are not allowed freedom of growth and exposure, the leaf-buds are either arrested or feebly developed, and the roots are of necessity injured. They do not spread, and the trees are liable to be blown over by the wind; they exhaust the soil in their vicinity, circumscribed by the roots of the trees around; their functions become languid, and thus they react on the stem and branches, so that the additions to the wood are small, and the timber is of inferior quality. In such a plantation there is a marked difference between the trees on the outside and those in the centre; the former, having their branches and leaves fully exposed on one side, grow with comparative vigour, and form excellent timber on that side of the stem where light and air are admitted; while the latter, hemmed in on all sides, are drawn up like bare poles, and produce a small amount of ill-conditioned wood. A crowded plantation, in which the trees are allowed to increase in size until they interfere with each other, cannot be easily reclaimed; for every attempt at thinning in this advanced stage of growth is accompanied with the risk of exposure to the blast, which speedily levels trees having no firm hold of the soil.

The Redwood as a Coppice Plant.—A gentleman showed, at the last meeting of the Royal Horticultural Society, a specimen of the Redwood of California (Taxodium sempervirens), grown near Reading, with a view of illustrating its suckering and rapid growth after being cut down, a fact which led him to think that the tree would be useful for coppicing, and also that it would be useful for Hop-poles, scaffold-poles, &c. This character of the tree is one well known to those familiar with it in its native country.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Osiers for Boggy Land.—I shall be obliged if any of your subscribers can give me information with regard to planting some boggy land on the west coast of Ireland with Withies or Osiers. I should be glad to know the most suitable sorts to plant and also the best mode of cultivating them.—B. K.

Jaborandi.—The Barbier prizes for discoveries in medicine and botany were given by the French Academy, to Albert Robin and M. Hardy for their investigation of this new drug, the leaves of Pilocarpus pinnatus, a plant of the Rue family.

Rubus australis hardy.—This singular looking shrub would appear to be quite hardy in the neighbourhood of London. In Mr. Ware's Nursery at Tottenham, it has lived out-of-doors for the past two years and now looks healthy. R.

Bambusa Metake the Hardiest Bamboo.—I am inclined to think this the hardiest of its race, so far as we have tried it in England. It is commonly supposed that Bambusa (Arundinaria) falcata is the hardiest; B. Metake retains its leaves with me well through the winter, even on heavy soil.—V.

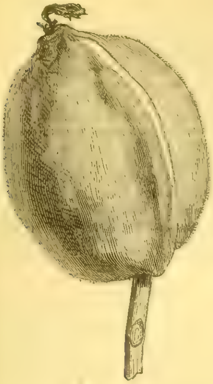


Fig. 18.—Juglans intermedia quadrangulata.

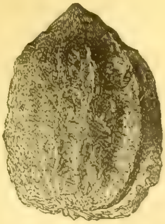


Fig. 17.—J. intermedia quadrangulata.

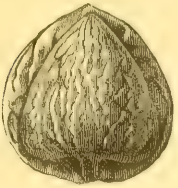


Fig. 10. Juglans regia cordata.

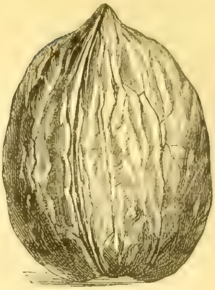


Fig. 15.—Noix Franquette.

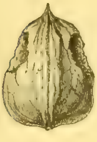


Fig. 7.

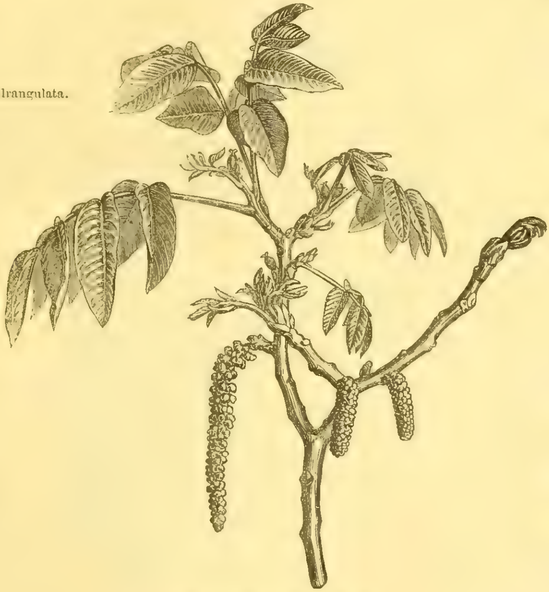


Fig. 9.—Juglans regia serotina.

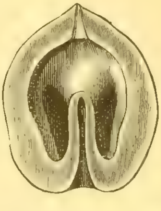


Fig. 19.—J. regia octogona (Section).

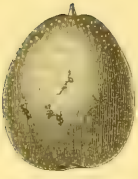


Fig. 8.—J. regia olivæformis.

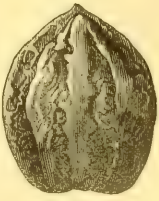


Fig. 20.—J. regia octogona.

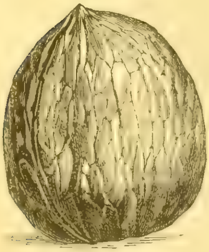


Fig. 13.—Noix Mayette.

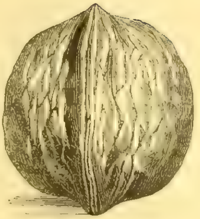


Fig. 11.—Noix St. Jean.

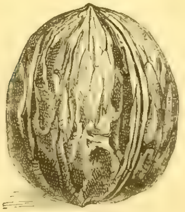


Fig. 12.—Noix Chaberte.

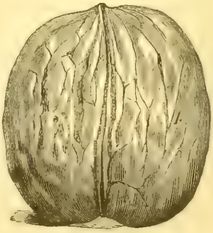


Fig 14.—Noix Parisienne.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Solanums.—Old plants of these should now be well cut back and at once planted out in a sheltered situation; they will bear without injury any frost that may occur after this time, and, if the planting-out be deferred until the ensuing month, they will not flower sufficiently early to enable the berries to become coloured soon enough in the autumn. Plants raised from seed, or cuttings, may be planted a little later; they will succeed the first batch, and will ripen their berries later in the winter.

Pits and Frames.—Zinnias, Tropæolum canariense, Rhodanthe Manglesii, Phlox Drummondii, Mesembryanthemums, French Marigolds, and Asters, should be sown at once for planting-out; also Cockscombs, Balsams, Globe Amarantus, Celosias, and Egg Plants, for growing in pots.

Celery.—As soon as young plants of this are large enough to be handled they should at once be pricked out in a cold frame, where they may remain until they are finally planted out. The system adopted by some of first pricking Celery out from the seed-pans into boxes, thence to a frame, and ultimately to the rows, by which it receives a check each time it is removed, is just the practice calculated to cause it to run to seed; the fewer checks it receives, from whatever cause, the better. In preparing a nursery-bed in a frame for the plants, select a light open situation, level the ground, and tread it quite solid, on it put 4 in. or 6 in. of ashes, rammed and beaten hard so as to render it impervious to the roots; on this place 4 in. or 5 in. of rich light material, consisting of half-rotten manure and leaf-mould, the other half being ordinary fine garden soil; in this the plants will grow rapidly, and move with little injury to the roots, thus obviating any check. Put them in 3 in. apart each way, give a good watering with a fine-rosed can as the plants are put in before they have time to flag, put the lights on the frame, shade from the sun, and admit little air for a few days until they begin to root, after which give plenty of air and light, and at all times sufficient water.

Lawns, Pleasure Grounds, &c.—Where there is any deficiency in the turf on lawns through the Grass being bare, this should be remedied by sowing fresh seeds. It is often better to do such work now than earlier, as if we have the seasonable showery weather usual in this month the seeds vegetate much quicker than if sown earlier, and are sooner out of the reach of birds, especially sparrows, which, if not scared away, will frequently not leave a single seed to grow. To prevent their attacks, white thread should be strung across the newly-sown seeds, secured to small sticks, stuck in the ground as recommended for the protection of kitchen-garden crops. But amateurs must bear in mind that the means that will effectually deter one kind of bird will in all probability be wholly unavailing in the case of others; for instance, the threads just named are generally sufficient to keep off sparrows, whereas chaffinches or greenfinches, which are equally destructive to most kinds of seeds, are no more deterred by such threads than if nothing at all had been used. In the case of these, nothing is so effectual as the gun, or nets, to exclude them. Inattention to protecting seeds in some way or other often neutralises all the labour bestowed in attempting to renovate lawns in that way. Before the seeds are sown a sufficient quantity of moderately dry sifted soil should be prepared for scattering over them to the depth of half-an-inch immediately they are sown, after which run a roller over the surface when the soil that has been scattered on is dry enough not to stick to it. The constant mowing of lawns and verges in time causes the Grass to become so poor that it can scarcely exist. Where this is the case, if a mixture of three-fourths sifted ordinary loam to one of powdered lime be scattered on the surface, about 1 in. in thickness, it will greatly improve the growth of the Grass. Guano and other light but potent manures, mixed with loam, are often recommended for this purpose, but they stimulate growth too much for a time, soon become exhausted, and are very much inferior to lime, which is more conducive to the growth of close fine Grass than anything that can be applied. Where Moss grows to any extent it is objectionable, principally through the brown unsightly appearance which it has in very dry weather, and the propensity that birds have for pulling it up, in order to get at the insects that harbour in it. Lime, in this case, will be found the best antidote. When necessary, the Grass should be mown, for if allowed to get too long before that is done no machine will do the work properly. In machine-mowing, a prevalent mistake is to set the implement so as to make it cut too low, the effects of which are, that a lawn so treated takes several days, after the Grass is mown, to recover its proper appearance; and, later on in the season, when dry weather sets in, it burns so as to frequently destroy the roots. Where Crocuses, Daffodils, or similar bulbs are grown in the Grass, the tops of these should not be cut off whilst in full growth, as that precludes the possibility of the plants blooming the ensuing season in anything like perfection. Whatever remains to be done in the shape of edging-up lawns or verges should at once be attended to. All evergreens that require cutting-in should now receive that attention; any shortening of the branches needed is best done just before they begin to grow; but on no account should they be subjected to the formal clipping process that is sometimes practised, whereby the natural habit and appearance of the plants are destroyed. When shrubs are planted so close together as to necessitate the whole or the greater part having their branches reduced, it is better to remove some of them altogether. Hollies, evergreen Oaks, Arbutus, Tree Box, and all Coniferous trees and shrubs should be but slightly cut, except, perhaps, branches that are taking an undue lead. Laurels, especially common kinds, may be cut in closer. Evergreen hedges, such as those of Holly, Yew, or Privet may now be cut. Where Ivy on walls is left for years without the loose unattached shoots being removed, it gets so heavy that the whole often gets torn off by the wind; another objection, too, is that when not periodically clipped in it casts its old leaves through the summer, and these get blown about by the wind, making a continual litter. In pruning Ivy, all the loose shoots should be removed, and if done now, in a few weeks it will be clothed with fresh leaves.

Mixed Borders.—A sowing of annuals should now be made; many of these, in most places, have given way to bedding plants, but still there are a number that cannot be dispensed with and that should find a place in every garden, large or small; amongst such may be mentioned Candytufts, Clarkias, Eschscholtzias, Helichrysums, Convolvulus major and minor, Collinsias, Ipomæas, Love-lies-Bleeding, Lupins, Mignonette, Nemophilas, Sweet Peas, Schizanthus, Stocks, and Tropæolums; rapid-growing plants like these require rich soil and an open situation. When crammed under trees, in out-of-the-way places, as is too often the case, they do not, as a matter of course, give satisfaction. Another mistake in the cultivation of annuals is sowing the seeds much too thickly and thinning insufficiently afterwards. In preparing the ground, just level the place where each kind is to be grown, then sow the seeds and cover with ½ in. of finely-sifted soil, and if some coal ashes be added, they will help to keep off slugs.

Edgings.—Unquestionably no edging looks so well as Box, but it has several faults, especially when used in kitchen gardens, it affords a harbour for slugs and snails; and, when it is found necessary to dress the ground with salt for the destruction of grubs and slugs, or for its manurial properties, or to salt the walks to kill weeds, it always stands in the way of the work being effectually done, as whatever precautions are taken, unless such a space near the edging is left undressed as to make the work only partially effective, the Box is sure to get injured; consequently, in the vegetable garden particularly, it is better to use something else, such as tiles made for the purpose, or common bricks set on edge; but the latter should be well burnt, or they will fall in pieces after frost. Where Box is intended to be planted, or where that existing requires making or mending, or where it has got too large, and the whole wants taking up and re-planting, it should be done at once, as there is no time in the year during which it moves so well as just before it begins to grow. In re-planting, the work should be systematically carried out by removing the whole of the gravel from the sides of the walks and laying it up in a ridge along the centre. The Box should then be all taken up and the roots protected; the ground should now be properly prepared and levelled, and the trench for planting on each side opened from end to end. The Box should then be divided, planting it well down so as not to leave it more than 2½ or 3 in. above the soil, treading the ground well to the roots, after which replace the gravel and finish the operations by adding a few inches of new gravel if required. The reason why Box edging in small gardens often gets too large and unsightly, is that it does not receive regular attention in the way of clipping, or is not cut close enough. Where bricks are used, their ends should stand about 2 in. above the gravel; they are liable to get a little out of line in rolling the walks, but this is easily remedied by the use of an ordinary crowbar; insert it deeply into the soil behind any that have been pressed out of line, and wrench them back into their places, treading the soil firmly up to them; by this simple means a considerable length of either brick or tile edging can be put to rights in very little time.

Greenhouse Plants.

Plumbago capensis.—The colour of this plant, and the ready way in which it may be grown and had in bloom for cutting or conservatory decoration in the autumn, render it one of the most desirable plants to cultivate. In our flower vases it may not be quite so lasting as some others, but that deficiency is fully compensated for by the free-blooming properties of the plant, and the soft subdued shade and pleasing form of the flowers. To obtain a vigorous growth and flowers in abundance, the plants should be turned out of pots about the middle of May, and be planted in some good soil in an open situation, where they can be well supplied with water, and treated in other respects as occasion requires. Any old plants that have been wintered should now be pruned in by cutting away the wood of last season's growth to within 2 in. of its base; place the plants in any forcing house or pit to give them a start, and gradually harden them off before placing them out in the open; plants treated in this way are in a far better condition for producing bloom in the autumn than any that can be grown in pots, while an immense saving of labour is effected.

Daphne indica.—The deliciously-perfumed flowers of the Daphne indica are held in the highest esteem, and yet there are few gardens in which the plant is cultivated to the full extent of its merits. Where an increase of stock is desired, the present is a good time for grafting; or cuttings taken off with a heel will root readily in heat under a bell-glass, or close propagating box. The Spurge Laurel (Daphne laureola) is a suitable stock on which to work it, but as its growth is much more free than D. indica, an unsightly swelling at the point of union frequently takes place. To obviate this, the scion should be placed as low down on the stock as possible, that the united parts may be kept beneath the soil, when the growth will be more regular. Any that require re-potting should now receive that attention, after which place the plants in gentle heat to encourage free growth. A good yellow turfy loam is the proper soil to pot them in, but as they do best when rather confined at the root, unless they are very carefully watered, a very small shift should suffice. Healthy plants that have filled their pots with roots will be greatly benefited by a little manure-water occasionally while making their growth and forming their flower-buds, after which it should be discontinued.

Primulas.—As soon as these are large enough to handle, they should be pricked out thinly in pans or placed singly in small pots. A light, rich soil, consisting principally of leaf-mould or peat, with the addition of some mellow loam and sand will suit their wants in that respect; place the pots or pans containing them where they can be properly shaded, and the plants receive an occasional syringing overhead to assist them to start freely.

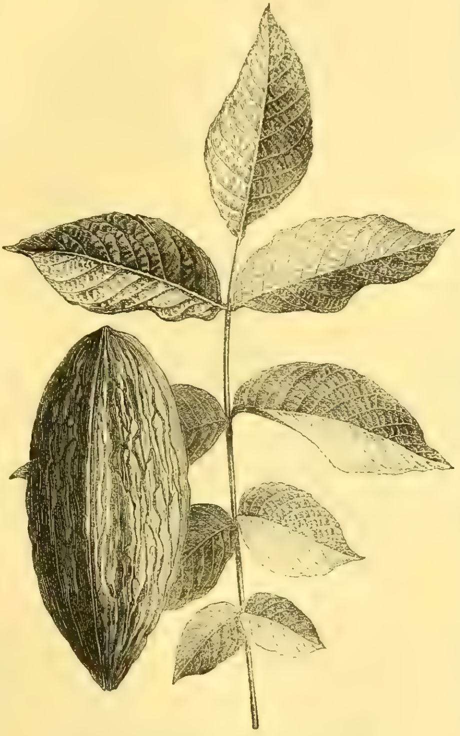


Fig. 6.—Juglans regia Barthereana (see p. 362).

Calceolarias.—These will now require close watching to keep them free from aphides, insects to which they are very subject at this season. If these be allowed to get ahead, they soon disfigure the plants beyond recovery, and, therefore, fumigation should be resorted to as soon as they begin to show themselves. The tender leaves of the herbaceous varieties are easily injured, and it will be necessary to exercise the greatest care that they do not get an overdose. Two or three weak applications in quick succession are at all times better than giving much at one time. Keep the atmosphere of the pit or frame in which they are growing in a moist state, syringing and shutting up early on the afternoons of bright sunny days.

Petunias have been so much improved of late as to be well deserving of pot culture. A packet of seed sown now will afford a great variety of colours, and come in very usefully in the autumn, when flowering plants are becoming scarce. Inferior kinds that may occur amongst them are sure to be acceptable for planting out in the mixed border, where their gay colours show off to great advantage. The young growth of any old plants that may have been saved through the winter if put in now as cuttings will make large showy specimens by July, a time when they are sure to be acceptable for replacing many of the usual occupants of the greenhouse that are generally removed to other quarters at that season.

Rhodanthe Manglesii.—To afford as much variety as possible during the summer and autumn months, some of the best of the annuals should now be sown for pot culture, for which purpose none are better adapted or more beautiful than the old Rhodanthe Manglesii, and its more recent varieties, R. major and Prince Bismarck. Seed of these should be sown at once, and placed in gentle heat to encourage them to germinate freely, after which pot them in rich light loam in 48's, placing three plants in each triangularly near the edge of the pot. A close moist frame suits well to grow them in till they begin to show bloom, when they should be removed to light airy shelves or other elevated positions where they can be seen to the best advantage. Martynia fragrans is likewise a very desirable plant for greenhouse decoration, and may be sown and treated much in the same way as the Rhodanthes, except that, being of larger size, one plant is sufficient in a pot.

Globe Amarantus are very brilliant showy annuals, and are admirably adapted for pot culture. If sown at once and grown on in gentle moist heat they will make fine plants and last in great perfection till late in the autumn.

Salvias.—These are indispensable where a supply of winter-flowering plants has to be kept up, dan if they be required of large size a batch of cuttings should be put in at once. By growing two or three varieties a constant succession of bloom may be preserved with but slight intermission from October to the end of April, a time of year when such brilliant-coloured flowers are sure to be much valued. S. splendens commences to throw up its fine heads of bloom in September, and these continue in perfection till near Christmas if the plants be placed in a moderately warm greenhouse or conservatory, where they can have plenty of light and air and be kept free from damp, as they soon suffer in a low temperature or close stagnant atmosphere. The flowers are of a bright scarlet colour, and are borne in the greatest profusion at the end of every shoot, so that a few well-grown Salvias have a very telling effect. S. Heeri is a magnificent bloomer, and comes next in succession. This is quite unsurpassed among soft-wooded winter-blooming greenhouse plants, and a few arranged among the other occupants impart quite a bright cheerful appearance to a whole house. Salvias are not good subjects for lasting in a cut state, as the flowers of most of the varieties fall off almost immediately after being severed from the plants. S. Heeri, however, lasts well, and is exceedingly effective on account of its attractive colour and the loose graceful arrangement of the flowers, that are always a great ornament to any vase. S. gesneræflora forms a noble-looking specimen, and well repays any attention that may be bestowed upon it. This is the latest-blooming of the trio, and keeps up a supply of its bright-coloured flowers till the end of May. To get early cuttings of the two latter varieties it is necessary to cut down the plants, placing them in gentle heat for the purpose of giving them a start. The young growth taken off roots readily and soon makes strong healthy plants that are sure to flower freely if liberally treated during the summer months. A rich, stiff, loamy soil, a fair amount of pot-room, and a copious supply of manure-water when the roots have made good progress, are the most essential conditions requisite for the production of vigorous-growing Salvias of large size and well clothed with foliage down to their base, without which they have only a very mean appearance.

Stove and Greenhouse Ferns.

Gradually remove the old shabby fronds of all Ferns, as the young ones emerge and begin to unfold themselves, taking care, while doing so not to injure the latter, which, in their present tender state, is easily done. Watch closely while removing them, to see that the young fronds are free from brown scale, or that none of these pests become dislodged while picking over the plants, and fall where they have a chance of establishing themselves, or they will soon spread and re-stock the house with their progeny. To remove or disturb the scaly covering is only to set free myriads of young ones in the embryo state that are protected beneath its covering, and that when liberated, float about in the air, and alight on other plants, to spread again as soon as conditions are favourable. By exercising a little care now while removing the old fronds, these troublesome insects to Ferns may be, if not entirely got rid of, at least so reduced as to be kept under. Some Ferns are subject to green fly, while the fronds are young and tender, and where these occur they soon cripple and disfigure their growth. The safest and best way to eradicate them is to dip the heads of the plants in weak tobacco-water, and afterwards give them a shake, when the insects will fall off. Fumigation, if applied sufficiently strong to destroy them, would endanger the safety of the young tender shoots, and should therefore be avoided while the fronds are in their present immature state. When any fresh soil is placed in the house for the purpose of potting, or filling up the pockets in which Ferns or other plants are grown, it is frequently the means of introducing slugs or their eggs with it. These, when hatched, prey on the growth of Adiantums and other choice Ferns directly they make their appearance, and the plants are thereby seriously injured unless they are closely watched. A Cauliflower or Lettuce leaf, saturated with tallow, or a little bran in heaps, forms a tempting bait for them; but the best way is to search for them by candle light, examining closely the plants they visit, as they will generally be found feeding there in preference to such common fare as any of the above. It is still the practice with many cultivators of Ferns to cut away the whole of the old fronds at one time, instead of removing them piece-meal, as they become shabby, or the young ones attain sufficient size to take their place. Such a course has a very weakening effect on the plants, and is a very frequent cause of many roots perishing, thus producing an enfeebled growth for a long time afterwards. The supply of water should be gradually increased as the young fronds gain in size and root-action becomes more vigorous, a time when they can scarcely be kept too wet, unless the soil should happen to be unsuitable or the drainage defective. Tree Ferns ought to have their stems kept well moistened, either by syringing them freely, or by pouring water down their stems, so as to insure them being kept in a properly moist state. If these be allowed to flag or suffer in any way from want of water, the young fronds are almost certain to become crippled and deformed, besides the great risk incurred of losing the plant altogether. Any of these, recently planted or not properly established, should have their stems bound up with Moss, and be frequently syringed, so as to keep them constantly moist, and encourage the formation of roots. The atmosphere in Fern houses can hardly have too much moisture in it at this season, and, therefore, every available surface should be well damped down. Syringing overhead is of great benefit to the plants, and this should be done just before closing the ventilators, early in the afternoon, whenever the day is dry and sunny. Avoid as much as possible drenching the heads of Gymnogrammas, or such as are liable to become disfigured by a course of treatment so suited to many other varieties. Where the above have to be grown with the general collection, a slight bedewing overhead must suffice. Shading must now be resorted to, but only for a few hours during the early part of the day while air remains on, as when sunlight is too much excluded the fronds are not so stout and serviceable for cutting as they are when more fully exposed. Where shades of a permanent character have to be used, as is sometimes unavoidably the case either from the size or situation of the house, and the difficulty attending the fixing and working a temporary one, the material to be used on the glass should be of the thinnest description, and such as is not of a very perishable nature. A slight coating of lime-wash, neatly applied to the outer surface of the glass, is perhaps the best for the purpose, as the rays of the sun are moderated and subdued without excluding the requisite amount of light for building up and consolidating growth. To fix the lime for the whole of the summer, it should be obtained in a fresh state, and then slaked in hot water, to be afterwards reduced to a thin liquid of about the consistency of paint, or ordinary white-wash. Two handy men should be employed to lay it on so that it may be done quickly, and with a little care and skill in using the brushes, it may be made to look so neat in appearance when seen from the inside of the house, as scarcely to be distinguishable in appearance from ground glass. The wash should be laid on thin, and before it has time to dry be dabbed over with a clean half-worn brush, so as to leave it free from smears and streaks. A shading put on in this way requires no further attention for the remainder of the season, and gradually comes off in the autumn from the action of the weather, just as the plants require all the light and sun that can be afforded them.

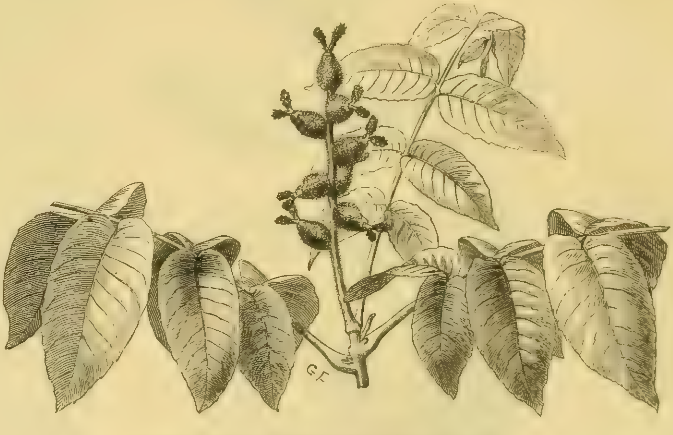


Fig. 16.—Juglans intermedia quadrangulata (see p. 363).

Sub-Tropical Plants.

Slow-growing varieties of these, such as Wigandias, Uhdeas, Acacia lophantha, Melianthus major, and others of that class, should now be pushed on in heat as fast as possible, in order to have them of sufficient size to produce an early effect after being planted out. Ricinus, Maize, Chilian Beet, and even Solanums do best sown any time this month, as they quickly attain their full size after being planted out, and furnish with much finer foliage than they do when confined in small pots, or in any way checked in their growth. The chief beauty of the Ricinus, when planted as single specimens, is in having the stem well clothed with large handsome foliage down to the surface of the soil; but this can only be done by sowing late, and keeping the young leaves constantly growing. R. Gibsoni should not be overlooked when ordering seeds of these, as the colour of the foliage is very striking, almost equalling the rich tint of Dell's Crimson-leaved Beet, or that of the Amaranthus. This and the Melianthus major as edging form a very striking and effective group, and suit each other well as to height. Cannas not yet started, should at once be divided and placed somewhere under glass to get them on the move before planting them out. An old half-spent hot-bed, or any pit or frame where they can get a little heat will answer the purpose admirably. Shake some rotten leaf-soil amongst the roots for them to lay hold of, so that they may be lifted at planting time with large balls without receiving a check. Coleus, so much used for carpet-bedding and other purposes, may now be struck with great rapidity in any place where they can have strong moist heat. A single leaf and bud is quite sufficient to form a plant, if taken with a piece of the old stem attached, and when so made, they will root in a few days. Alternantheras will strike with the greatest freedom at this season in any hot-bed, frame, or similar position where they can be kept close and moist. The best way to manage these and other plants of similar character, of which large quantities may be required, is to put some light sandy soil in the frame, and prick out the cuttings in it at about 2 in. apart, and let them remain in that position till wanted. When thus treated, the lights can be gradually withdrawn to harden them off, and much labour is thereby saved in potting or handling them several times over, as would be the case if the cuttings were inserted in pots or pans in the ordinary way. The beautiful dwarf-spreading yellow-variegated Mesembryanthemum cordifolium strikes best on shelves in moist houses or pits near the glass where it does not get too much sun. In propagating boxes, hot-beds, or other closely-confined places away from the air, it is apt to damp off on account of the quantity of moisture contained in its leaves and stems. This is a bad subject for transplanting, and must therefore be potted; but the smallest sizes will do for the purpose, as it forms but very little root. Pyrethrum Golden Feather should be pricked out if at all thick, as, when planted out fully exposed to the sun and air after being drawn up in seed-pans or boxes, it soon shrivels up and dies, or makes but little progress. To grow any fine-foliaged plants really well, and get them to develop the rich colours of their leaves to perfection, it is necessary that the soil of the beds in which they are grown should be rich and open, that the roots may penetrate it freely. As there will be but little time to spare by-and-by to prepare beds for the different plants intended for them, any work of this nature that is necessary should be done at once. There is no comparison between the colour of Alternantheras in poor shallow soils, and such as are grown in well-prepared beds moderately enriched with mild decomposed manure. The old Pyrethrum, too, brightens under the effects of good living, as do most of the coloured foliaged plants, if fully exposed to the influence of sun and air, so necessary in bringing out and developing their delicately beautiful tints.—J. Sheppard, *Woolverstone Park.*

Hardy Fruits.

Since my last communication under this head, the weather has been in all respects most favourable to the unfolding of fruit blossoms, and though Apricots were injured by the severe frosts of the third week in March, a sufficient quantity have set for a moderate crop. Peaches are setting well, Pears are full of blossom, that on walls being already fully expanded and looking most vigorous. Plums are literally covered with bloom, and early Cherries the same, the only exception being Apples, which are not flowering so well as was expected at one time, though from what we have seen elsewhere the scarcity of Apple blossom is local only, so that on the whole—should severe frost not visit us and blight our hopes—another fruitful season may be anticipated. It will not yet be safe to dispense with wall-coverings, as they should remain down for some time after the sun is up, for the greatest injury is always caused by the direct rays of the sun on uncovered trees before the frost is off. Grafting should be completed forthwith, as both stocks and scions will soon be too far advanced for the operation. Occasionally look over those that have previously been grafted, as the frost sometimes loosens the clay, and causes it to crack and fall away, and it is important that this should be renewed, and the grafts kept air-tight; also remove any shoots made by the stock as soon as perceived. Peaches, Nectarines, and Apricots will now require disbudding, which should always be done before the buds attain much size, or by their removal a severe check is given to the trees; when done early, they may be finally disbudded, but if left till the shoots are 1 in. or 2 in. long, a few only should be removed at intervals of a few days till all are completed. If green fly put in an appearance, as is frequently the case at this stage, dust the trees over with Tobacco powder, applied through a flour dredger, or syringe them with soap-suds, and directly the fruit is set wash the trees with a syringe or garden engine to dislodge the fallen blossoms, and loosen any which still adhere to the fruit. The fruit sometimes sets in clusters, and when such is the case it should be thinned out immediately. Strawberries are now beginning to grow freely, and should be mulched with stable litter on the first opportunity, previously clearing them of all weeds, either by hand or hoeing. Personally, we disapprove of hoeing or digging Strawberry beds after they are first planted, as thereby so many of the best roots are destroyed. Our system of culture is as follows:—New plantations are made on deeply trenched and heavily-manured ground every third year; they are well mulched with good manure always once, and sometimes twice a year, and this in addition to keeping them free from weeds and runners, and an occasional watering in dry weather, is all the attention they receive, and we never fail to have an abundance of fine fruit. Strawberries, like most other hardy fruits, do best in firm or rather hard ground, and should never be disturbed with either spade, fork, or hoe, till the plants are done with. A piece of ground should now be prepared for the planting-out of the forced plants; from such a plantation the earliest and best runners may be had for next season's forcing, and, in addition, some little fruit in the autumn. The flowers should be kept off, and, if requisite, be regularly watered till thoroughly established. Vines in the open air will, about this time, require to be disbudded; usually the shoots are in such clusters that, unless some are removed, all are worthless. From practical experience we strongly incline to the belief that in the more favoured districts as to climate, open-air Grape culture might be made remunerative, by the bestowal of a very little labour, in the form of disbudding, regulating the growth, and thinning-out of the bunches; at least, the system undoubtedly merits a fair trial at the hands of persons interested.—W. Wildsmith, *Heckfield.*

Trees and Shrubs.

Lose no time in finishing forest planting, as this month may be said to terminate the season. Conifers and other evergreen trees and shrubs may now be safely transplanted; their roots should be exposed as little as possible to the air, and they should never be allowed to get dry; if the weather be hot and dry at planting time, water both foliage and roots freely, and mulch heavily. Pampas and other Grasses, herbaceous plants, and Ferns will succeed if shifted now. Wherever timber or underwood was cut last year, the ditches should be cleaned out and new ones made wherever water is stagnant. Level and otherwise repair wood rides on which timber has been hauled during the winter. Wood rides should be kept 3 or 4 in. higher in the middle than at the sides, so as to render them dry, and unless the sub-soil is gravelly and porous a ditch should be made on each side not less than from 2½ ft. to 3 ft. wide at top and from 2 ft. to 2½ ft. deep. Clear Ivy off forest trees, and even on underwood stools of large size it should not be allowed to establish itself. All gates and stiles should be put in order.

Hedges.—Any hedges still untrimmed or "unpleached" should now receive that attention. All gaps should be planted up with a double row of Quick and Hornbeam; where ground game is numerous, bitter Willows succeed best. Salix Kerksii should be selected; it is a vigorous grower, and is disliked by rabbits. In case of a hedge being very patchy and weak, and, in itself, an insufficient fence against cattle, the following attention will make it secure:—Stretch along the line of the fence, about 18 in. above the ground, a strand of strong wire fastened with staples to stakes set up about every 5 yards apart, and the hedge should be trimmed or pleached down to the height of the wire, and afterwards allowed to grow over the wire so as to form a back-bone, as it were. Any new hedges that are still to be planted should be put in forthwith; the ground on which they are to stand should be trenched 12 in. or 15 in. deep, and from 4 ft. to 4½ ft. wide; bad soil or stones should be taken out, and good soil or chopped up turf added; a slightly raised bed or bank is preferable to planting on the level; this may be formed by placing the soil taken out of the ditch on to the bank, putting the best soil in the centre, and keeping the turf on the sides, which should be from 12 in. to 15 in. high and 3 ft. wide at top. The ditch may be from 3 ft. to 3½ ft. wide at top, and 2½ ft. deep; the plants should be put in about from 5 in. to 6 in. apart. For coppice, a mixture of Hornbeam and Quick forms a good hedge, planting one of the former to six of the latter. Hornbeam grows well under the drip of trees; it will bear pleaching, and throws up strong vigorous shoots when cut close to the ground. Young hedges should be allowed to grow two years after planting before they are cut down close; after cutting, allow them to grow two more years; then trim them into shape, encouraging a thick broad base and narrow top. The first cutting into shape may take place when the hedge is about from 15 in. to 18 in. high, allowing it to rise 3 in. or 4 in. every year until it has attained the desired height, which should be from 4 ft. to 5 ft. high and about 3 ft. wide at bottom. The best tools for trimming hedges are those made by Polwarth (late Sanderson), of Dunse; Nos. 60 and 70 are the most useful sizes for small hedges, or for topping large ones; Nos. 80 and 90 are stronger knives, and are used for "breasting" and cutting over old hedges; the cost of these knives is from 5s. to 6s. each.

Thinning of Plantations where necessary should be pushed on; better sacrifice the approaching growth on the nurses than allow the Hardwood to be choked up another season. More injury is done throughout the country by under-thinning plantations under twenty years old than by over-thinning them; old woods are easily irreparably injured by over-thinning; but in the case of young healthy-growing plantations the case is very different. Bark stripping may be begun in another fortnight, or less if the weather keeps mild; therefore, it will be necessary to forward all work in progress as much as possible before the busy season of Oak stripping begins; all coppices or woods intended to be thinned should now be gone over and marked, taking care to mark only the most unhealthy and badly shaped trees that are injuring better ones; thin rather freely round the out sides, particularly where hedges are too much overhung by trees.

Nursery Work is unavoidably very backward, on account of the continued wet season. Where the soil is heavy, it has been quite impossible to proceed with the transplanting of young trees into nursery rows; but as soon as the land is dry enough, this must receive prompt attention, and take precedence of all other kind of ground work. All Conifers or evergreen trees and shrubs intended to be planted out this season should be lifted and heeled in in a shady and sheltered place in the nursery. Finish sowing seeds of forest trees and shrubs; Conifer seeds may now be sown when opportunity offers. Graft ornamental trees. The destruction of weeds, if done now, will save double expense further on in the season; when weeds are thoroughly kept down in the spring months, they seldom get the upper hand in summer and autumn. If the annual stock of peat, leaves, or turf has not yet been collected, this ought to be done as early as possible; where road-drift and parings can be had it is invaluable for planting trees and shrubs in. I collected about thirty cartloads of this last year, and had it stacked so as to keep it dry, and during this winter I have found it most useful when planting young Conifers, ornamental trees, and shrubs; instead of being obliged to put their delicate fibrous roots into a soddened soil, they were covered with this compost dry and sweet for the roots to feed on at once.—George Berry, *Longleat*.

CUCUMBER CULTURE IN THE OPEN AIR.

By picking out, as it were, the warmest months of the year, and assisting the plants by means of shelter and other favourable conditions, anyone having a warm garden may enjoy Cucumbers from June to the middle of October. Choose a sheltered warm situation in any part of the garden, with a southern aspect, then remove 1 ft. or 2 ft. of soil over a surface a yard or so wide, fill up the space so formed with some decomposing leaves, manure, tan chips, Cocoa-nut fibre refuse, or anything that will generate warmth. Cover this over with the soil removed, and either sow the seeds on or set plants in this warm bed. The latter is by far the best course, as by this means much time is saved, and the heat of the artificial bed quickly pushes on the plants. Therefore, the seeds should be sown under glass, if possible, or in some very warm place, at least three weeks before this growing bed is formed in the open air. As soon as the plants have formed a rough leaf beyond the two smooth cotyledons, they should be potted off singly and deeply, so as to bury all the stem up to the cotyledons. By the time the plants have filled a 60-size pot full of roots, they will be in the best possible condition for planting out on the artificially warmed bed already described. After planting, it is a good practice to cover the plants over with a bell-glass, cloche, or hand-light, or any other kind of glass protector, until they get a firm hold of the soil. This helps them the sooner into free growth and plentiful fruit-bearing. But still the glass covering may be dispensed with. In that case, however, it will hardly be safe to plant out until the end of June, or if planted earlier, a flower-pot or old hat-box, or a double paper protector had better be placed over them every night until all danger from frost is over. One of the simplest protectors for such plants is a wooden box 6 in. or 8 in. square, and 10 in. or 1 ft. deep, with the upper side covered with oiled calico drawn tight. But, by planting strong plants late, we may dispense with all these coverings, and also with the artificial terrestrial heat, although the latter undoubtedly affords a powerful stimulus to growth.

Out-of-door Cucumbers may either be grown on the ground, or slightly raised above it on trellises of various sorts, or they may be trained on walls and fences, or other vacant places. The surface of the earth is, however, perhaps the best position for them, for there they have congenial warmth, and the leaves are strengthened by the evaporation of moisture from the ground. The foliage as well as the roots are also readily watered in such a position, and the roots are so shaded as to protect them from being scorched or scalded by the sun. The necessary training, stopping, and cutting of the fruit are likewise easily attended to when the plants are allowed to ramble freely over the surface. Out-of-door Cucumbers are generally allowed more freedom of growth than those in frames. In the latter, the plants have what may be termed a hard time of it; for what between fruit-bearing and the pinching back of each shoot to the next joint beyond the fruit, they are subjected to a compound pressure. But in the open air, as the object in view is a quantity of small, crisp, sweet, eatable fruit, rather than a few large ones, the plants may be very much left to themselves, with the exception of a weekly overhaul to cut, water, &c. Cucumbers also do well trained up south or west walls, planted either on the top of a few spadesful of fermenting materials, or simply in warm borders. Well watered, carefully stopped and trained, many of the shorter frame Cucumbers will do fairly well in such positions, whereas the long varieties, such as the Stockwood Long Ridge, the Long Prickly, &c., do exceedingly well. The plants must be watered freely at the roots if placed against a south wall, and should be soaked overhead at least once or twice a day.

Even those who have no garden need not despair of growing their own Cucumbers for pickling, salad, and eating, on a stone yard or balcony. The varieties already named, as well as the Short Prickly and Cluster Gherkin, may be grown in pots, boxes, or vases, and would prove quite as interesting, and almost as ornamental, as many of the common plants often found in such positions. In almost any soil Cucumbers will grow, provided it is open and rich enough; though, of course, the orthodox mixture of two parts of turfy loam and one of rotten manure is the best for those in pots and boxes out-of-doors. See that the pots and boxes are well drained, a matter even of more importance than the soil, for the latter can always be enriched by house sewage or manure-water. Care must, however, be taken not to over-stimulate out-of-door Cucumbers, as gross growth is apt to invite mildew, one of the greatest enemies to Cucumbers in the open air.

D. T. Fish.

A NEW MANURE.

A fertilising agent, called le Floral, has lately been brought out by a French house, under the patronage of the French Agricultural and Horticultural Societies. It is a chemical compound, the constituents of which I do not know, but in which the presence of nitrate of soda and ammonia is apparent; and one of the principal points (next to its efficacy) is its strength and the ease with which it can be applied to plants, &c. With amateur horticulturists this is a great consideration, especially where it is desired to employ manure in the house or conservatory. I had seen the "Floral" highly spoken of in some French paper, and determined to get a sample, which I tested in various ways last year, and my experience leads me to recommend it strongly. It is in the form of a powder, which should be dissolved in water for use. There are four special compounds, each of which is adapted for different plants. Thus No. 1 is suitable for (among others) Agaves, Ageratums, Aloes, Calceolarias, Cinerarias, Narcissi; and, among vegetables, Beetroot, Celery, Cabbage, Lettuce, Radish, &c.; No. 2 is used for Arums, Auriculas, Chrysanthemums, Ferns, Geraniums, Myrtles, Sweet Peas, &c.; No. 3 for Asters, Begonias, Centaureas, Clematis, Fuchsias, Lobelias, Rhododendrons, Roses, &c.; and No. 4 for Camellias, Jessamines, Grasses, Crocus, Green Peas, Rhubarb, &c. It does not do to use the compounds indiscriminately, but the directions should be followed closely. I tried the experiment of watering the same kind of flower in different pots, with all four mixtures, and found that those not recommended for the particular plant had a different effect (sometimes less apparent, sometimes a bad effect) from that produced by the specified mixture. The powder is neatly packed in small tin boxes, and the four kinds of "Floral," labelled and in separate tins, are sent out together in a large case. The smallest-sized tins contain 125 grammes (¼ lb.), and are sold at—Nos. 1 and 2, 1 franc (10d.); Nos. 3 and 4, 1·75 franc (1s. 6d.). The powder should be dissolved in water in the following proportions: of Nos. 1 and 2 (2 grammes) about 30 grains, or half a teaspoonful to a litre of water (about 1¾ pints); and of Nos. 3 and 4 the same quantity to twice the amount of water. Only a very small quantity of the solution should be given to each plant, and it should be applied to the soil, and not poured on the leaves; say, to pots about No. 32 size, two wineglassfuls of the mixture twice a week. At this rate the ¼ lb. packet would suffice for 2500 doses of Nos. 1 and 2, and 5000 of Nos. 3 and 4. For plants in the ground a larger quantity will, of course, be necessary, but it is astonishing how far a small quantity of the manure will go. The necessary waterings with fresh water should of course be continued in the interval between the use of the manure. For watering plants in the open, with a rose, a weak solution of the powder may be used, in the proportion of half a teaspoonful of Nos. 1 and 2, and half that quantity of 3 and 4, to nine quarts of water. So far as I have tried the "Floral," I can recommend it as an excellent manure. Its advantages are apparent from what I have said, and I have only to add that it may be obtained of Messrs. Alfred Dudouy & Co., 38, Rue Notre Dame de Victoires, Paris. The carriage from Paris is not very much. —"Country."

Asphalte v. Wood.—On Tuesday, at a meeting of the City Commission of Sewers, held at Guildhall, the long-vexed question of asphalte or wood as a street pavement, and especially in the City of London, was brought prominently under consideration. On a division, and after the advocates of each mode of paving had spoken on the subject, 24 voted for wood, and 22 against it. We are convinced from observation of the wood pavement, that it will in the end disappoint in reference to duration, as compared with asphalte. By the aid of hydrants the asphalte can be regularly washed, and the dusty filth which makes the air of cities so disagreeable and unwholesome in dry weather, may be completely removed. With a wood pavement perfect cleanliness is impossible. The wood is also much the most expensive, and the process of laying down is also exceedingly offensive. The motion on wood pavement, as felt in a vehicle, is not so agreeable as that on asphalte.

Cultivated India-rubber and Cinchona trees.—At a recent meeting of the members of the Society of Arts, Admiral Ommanney in the chair, Mr. Markham gave a description of the cultivation of Caoutchouc-yielding trees in British India. The first instance of the conversion of the Caoutchouc-yielding tree from a wild to a cultivated state occurred seventeen years ago. On April 5, 1859, he submitted a scheme for the collection of plants and seeds of the various species of the febrifuge Cinchona plants in South America and their introduction into India. At that time Cinchona plants were uncultivated. Now, there were extensive Cinchona plantations yielding larger per-centages of febrifuge alkaloids than the trees ever did in their wild state, and extending over the Neilgherry Hills, the lower slopes of the Sikkim Himalaya, and the higher ridges of Ceylon. From these plantations, some belonging to Government, others to private companies, about 140,000 lb. of bark was annually imported into this country, and the yield was rapidly increasing. The permanent supply of an indispensable medicine had been secured, and it had been brought within the reach of millions who formerly could never procure it. Thousands of lives would by this means be saved, and the material wealth of India and Ceylon would be increased by the addition of a valuable product to their list of exports. In 1870 Mr. Markham came to the conclusion that it was necessary to do for the India-rubber or Caoutchouc-yielding trees what had already been done with such happy results for the Cinchona trees. While the trees yielding quinine and the febrifuge alkaloids only grew wild on the slopes of the Andes, and all belonged to one genus, the Caoutchouc-yielding trees were of several genera, and were found in the forests of India, the Eastern Archipelago, Africa, Madagascar, Mexico, and Nicaragua, as well as in South America. Owing, however, to the enormous demand for Caoutchouc, the most reckless fellings were now going on in all the tropical forests which yielded this valuable product, and the time had now come when plantations must be formed of Caoutchouc-yielding trees in order to prevent their eventual destruction and to provide for a permanent supply. It was well known that Caoutchouc was now used for an infinite number of purposes. The imports into England in 1874 from South America were 70,866 cwt.; India, 9341; Borneo, 7101; Africa, 6380; and Madagascar, 5984. After giving a lengthy explanation as to the cultivation of these trees, Mr. Markham, in conclusion, remarked that so far as British India was concerned, the necessary measures had now been adopted with a view to secure a permanent supply of the best Caoutchouc.

NOTES AND QUESTIONS—VARIOUS.

The Best Winter Pine-apple.—Twenty-five years ago I pronounced the Black Jamaica to be the prince of winter Pine-apples, and twenty-five years of subsequent experience tell me that I spoke the truth. The Black Prince is showy and fairly good, but it cannot be compared with the Black Jamaica; the Pine-apple that comes nearest to it is Prince Albert. Mr. Thomson, of Clovenford, says no Pine in mid-winter can approach the Black Jamaica, a statement which I can fully substantiate.—R. GILBERT, *Burghley.*

Weather in the Eastern Counties.—Yesterday (April 10) and to-day we seem to have got back to the unplesaant weather we seemed to have escaped. Yesterday it was blowing hard and raining the greater part of the day; last night we had a slight frost; this morning frequent heavy snowstorms, and the thermometer now (11.30 a.m.) stands at 36°. very discouraging for gardeners without glass to shelter their favourites.—J. G. NELSON, *Aldborough Rectory, Norwich.*

Rhododendron caucasicum.—A small plant of this which stood out fully exposed all the winter, began, during the severe frost and snow in March, to expand its buds, and now it is splendidly in bloom, though only 18 in. high; it has twenty-three trusses of flowers on it all open. The trusses, too, are large in proportion to the size of the plant, and the foliage being good, it is just now a very beautiful object.—J. C. CASSON, *Thorne, near Doncaster.*

Hydrophyllum Plants.—A few years ago I received from Canada, among other plants, two species or varieties of Hydrophyllum. As they have increased very much, it is necessary to thin them, and it is a pity to throw them away if any of your readers would like to have a root. They grow very well in moist soil, but would no doubt prefer the margin of a pond, where the peculiar rhizome can creep over the surface of the dry bank, while the roots penetrate to the moist ground below. I shall be happy to send portions of it to any one who will communicate with me as far as it will go.—W. H. MOBERLY.

White Calville Apple.—This variety, as seen in Covent Garden, imported from France, is both large and handsome, but when grown in England, except in favoured localities, it only attains a middle size. Yesterday (March 27) Mr. Wilson, gardener to Earl Lindsay, showed me half a dozen fruit of this variety grown on a south wall at Uffington. They were of good size, as yellow as gold, quite plump and fresh, and their flavour was delicious. This variety, Mr. Wilson assured me, is a constant bearer, and he is enabled to have fruit of it all through the month of April.—R. GILBERT, *Burghley.*

The Californian Buckeye (*Pavia californica*).—This interesting flowering tree was introduced so recently as 1857 from California, where it is reported as occurring in some districts in considerable abundance, and attaining in sheltered valleys heights of from 30 to 40 ft. As seen in our gardens it is a slender-branched bushy shrub or miniature tree, amply clothed with small bright green palmate leaves, with from five to nine leaflets. The flowers are white, sweet-scented, and borne on erect panicles from the points of the shoots; they are produced in great profusion on young moderate-sized plants, and when in full perfection, which is generally about the middle of July, they have a fine effect. Though as yet comparatively seldom met with in collections, it is a very distinct-looking handsome tree, admirably adapted for a specimen on a small lawn or shrubbery border, and as such it will doubtless soon become popular. From its unfortunate tendency, however, to grow late in autumn it cannot be recommended for every situation; but when planted in such as are sheltered, and in light dry soils, so as to secure early growth, and the thorough ripening of the wood before winter sets in, there are few districts in which it will not only grow freely, but fully reward the cultivator with an annual display of its showy blossoms.—"The Gardener." [This is, indeed, a beautiful tree, and wholly distinct in aspect from any other low tree with which we are acquainted. This is particularly true of its winter aspect when full grown or old. It ought to be tried in many gardens in the warmer parts of these islands.]

Irish Yews with Single Stems.—When in a young state a very small amount of attention is needed to remove surplus leaders, and thus keep these to one main central stem. This renders the plants much more valuable, and saves endless trouble in after years in keeping them in shape. In many nurseries this early training is too often neglected, and, as a consequence, when the plants become large, they are blown about by every gale, and the labour and trouble in rectifying matters after a storm is a severe tax upon both time and patience. Were I now called upon to make extensive plantations of these and similar Conifers, I would discard every plant that had more than one main stem, for I have had so much labour at various times and places where this early attention had been neglected as to thoroughly impress upon my mind its importance. When plants of Arbor vitæ are used in ornamental grounds for forming hedges—for which they are well adapted—the advantage of confining them to one main central stem will be appreciated as they advance in growth. It is true those plants that are furnished with several leading shoots may appear to the uninitiated more bushy and better furnished than those kept to one stem, but in this, as in many other matters, appearances are not to be trusted, for whilst a plant confined to a single stem will annually improve in value, another, on which no such attention has been bestowed, becomes annually more troublesome; and, if much exposed to winds, the evil is increased tenfold.—E. H.

Oregon Woods.—Mr. Dufur has collected in all thirty-three varieties of Oregon woods, which have been gathered by his personal efforts, the means for bringing the same out of the mountains and forests having been furnished by a few gentlemen at Portland, among whom are Messrs. R. R. Thompson, Ladd, Corbett, and Failing. We ("Californian Horticulturist") noted one specimen of Fir, a transverse section cut 130 ft. from the ground, measuring 7½ ft. across; another cut 200 ft. from the ground measured 5 ft. across. A Spruce section cut 98 ft. from the ground measured 7½ ft., and at 143 ft. it shows a section of 5⅓ ft. in diameter of the tree. A Laurel measures 42 in. across, and Alder 40 in., a Chittim-wood 14 in., a Larch 5 ft. A Silver Pine is on exhibition, a remarkable wood that finishes equal to Satin-wood, and is only found in mountains at an altitude of 4000 ft., which is said to be only known in the Alps and in our Cascade Mountains. A kind of Hemlock Spruce, found near the coast, makes very fine cabinet work. Of course there are specimens of the beautiful Oregon Maple, and of many other woods we need not name.

Number of Conifer Seeds in a Pound.—An inquirer asks the number of seeds in a pound of some of the leading Conifers, and how many he could make grow. We can easily give the number of seeds, but we are entirely at a loss to say how many of these he will make grow, even if all the seeds are perfect, which is rarely the case. One who has had ample experience in growing the young trees will be far more successful than a novice—the nature of the soil, its condition depth of planting, shading, &c., as well as the work of some depredators, having much to do with the results. The following numbers were obtained by Mr. Douglass, of Illinois, an extensive and successful raiser of evergreens, after much careful weighing:—Norway Spruce, 58,000 to the pound; Hemlock, 100,000; White Pine, 20,000; White Spruce, 160,000; Scotch Pine, 69,000; Austrian Pine, 28,000; Cembran or Stone Pine, 2700; Balsam Fir, 45,000; American Arbor Vitæ, 320,000. European Larch has about 70,000 seeds to a pound, Pears and Apples about 12,000 seeds.—"Albany Cultivator."

SOCIETIES AND EXHIBITIONS.

ROYAL WESTMINSTER AQUARIUM AND WINTER GARDEN SPRING SHOW,

April 12 and 13.

Though a good exhibition, this was by no means so well supported as the very liberal prizes offered would have led one to expect. Among the subjects of more than ordinary interest, attention may be directed to the twelve superb fruits of imported St. Michaels smooth-leaved Cayenne Pines, furnished by Messrs. Webber & Co., of Covent Garden. These varied in weight from five to eight pounds each, and were plump and in every way well-proportioned fruit, as fresh, to all appearance, as if just cut. Messrs. G. Paul & Son showed several round baskets of very large and richly-coloured blooms of Maréchal Niel Rose; and the Cyclamens of Mr. H. Little, of Twickenham, were of very excellent quality; as were also the twenty half-specimen Azaleas, staged by Mr. Ratty. Of Auriculas, Mr. Jas. Douglas and Mr. Charles Turner were the principal exhibitors. Mr. Dean's improved Primroses were also very attractive; and the same may be said in reference to the lovely hardy flowers contributed by Mr. Parker, of Tooting.

Stove and Greenhouse Plants.—In the class for twenty specimen Azaleas, Mr. Ratty, gardener to R. Thornton, Esq., The Hoo, Sydenham Hill, was first with well-bloomed plants, among which we remarked Flag of Truce, an excellent double white kind; Jules Margottin, paper white; Concinna, bright purple; Madame Marie Van Houtte, double creamy white, striped with rose; Roi Leopold, fiery rose; Duc de Nassau, bright satiny carmine, and others equally good. Mr. Charles Turner furnished well-bloomed standard-trained plants, among which we noticed Francois Devos, double scarlet, and one of the very best of its class; Pelargoniiflora, soft rose; Rubens, scarlet; Madame A. Verschaffelt, white, crisped in the edge, and striped with rose; Reine des Pays Bas, white spotted and striped with lilac, and others. In the open class for nine Azaleas, Mr. B. S. Williams was first with neat well-bloomed examples of Stella, Mars, elegans, Eualie Van Geert, Borsig, perfecta, and others equally well managed. In the amateurs' class, for six specimens, Mr. J. Ward stood in the foremost rank. The first prize for six forced Rhododendrons was awarded to Mr. Child, who contributed R. Veitchianum, an elegantly-frilled petalled white kind, R. Everestianum, R. purpureum elegans, R. Brayanum, and R. Princess Alice, all in good condition. Orchids were represented by some good plants, the best six in the amateurs' class being those from Mr. J. Ward; among them were observed Odontoglossum Bluntii, O. Pescatorei, Dendrobium Farmerii, Lycaste Skinneri, Trichopilia suavis, and Cypripedium villosum, all in excellent condition. In the nurserymen's class, Mr. B. S. Williams furnished good plants of Vanda tricolor and V. suavis, Dendrobium densiflorum, Lycaste Harrisoniæ, Dendrobium Wardianum, and Cypripedium villosum, the latter bearing seventeen flowers.

Cyclamens and Cinerarias.—Cyclamens were shown in magnificent condition; indeed, it is questionable whether finer specimens than those staged by Mr. H. Little on this occasion have ever been seen at any exhibition. They were literally masses of fresh foliage and well-shaped richly-coloured flowers. Mr. Little had the best groups of fifty and twenty-five plants respectively, the second awards going to Mr. R. Clarke and Mr. James. In the nurserymen's class Mr. E. Edmonds was first with well-grown plants, and the same exhibitor obtained a certificate for a basket of large-flowered seedling varieties. Cinerarias in good condition came from several exhibitors. Mr. James, of Isleworth, had the dwarfest and most perfect half-dozen, the flowers of which were well-shaped, brightly coloured, and of good substance. The practice of naming these varieties should however, we think, beabolished, inasmuch as they cannot be perpetuated true from seeds, and Cinerarias worth pot-room are scarcely obtainable in any other way. Messrs. Dobson & Sons had a good collection, but more lax in habit and flower than the last. Mr. J. Hepper staged six large and well-flowered plants, to which a third prize was awarded.

Hardy Flowers.—These gems of the early year were well represented, the best collection of them being that furnished by Mr. Parker, of Tooting; among these we remarked Doronicum austriacum, with large golden-rayed flowers; Aubrietia purpurea grandiflora, a dense mass of bluish-lilac flowers; Saxifraga Stracheyi, of which we hope soon to give an illustration; and S. media, both good forms of the broad-leaved section. Associated with these were Orobus vernus; two potfuls of Triteleia uniflora; the lovely sky-blue Anemone apennina; the rosy variety of Scilla campanulata, Fumaria bulbosa, Iberis linifolia, and Primula elatior, Golden Plover. Mr. R. Dean, who was second, furnished a group of smaller plants, among which were examples of Myosotis dissitiflora; crimson and yellow Primroses and Polyanthus; yellow, blue, and maroon Pansies; golden Wallflowers, Alyssum saxatile, rosy Dielytra, double white Daisies, and Primula cortusoides amœna. Mr. Hooper, of Bath, also staged a group of Pansies, Primroses, Polyanthus, Hyacinths, and Double Daisies, the Pansies especially being large and fine. Auriculas.—Mr. Douglas had well-grown plants in the class for fifty varieties, among which we noticed a distinct dark purple Self, named Topsey (Kay), a welcome addition; also Robert Trail, Mary Ann (Fletcher), Marie (Chapman), Colonel Champneys, Eliza, and a lovely blue Self, named Formosa (Smith). Among the Alpines in this group, we noted Edgar (Turner), crimson purple; Beatrice, purple; Brilliant, Maroon, Bronze Queen (Turner), a reddish-maroon, and quite distinct in colour. Mr. Charles Turner had also a choice and well-grown collection, in which we remarked Colonel Champneys, Diamond, Prometheus, Charles Perry, John Gair, and others of equal merit, the colours being very brilliant throughout. Mr. James likewise had a good collection. Mr. Douglas contributed a well-grown stand of show varieties, including the following, viz.:—John Waterston (Cunningham), Formosa (Smith), Col. Champneys, Robert Trail (Lightbody), Competitor (Turner), Alderman Wisbey (Turner), Admiral Napier (Campbell), Lancashire Hero (Cheatham), Alderman C. Brown (Headley), and George Lightbody (Headley). In the class for twelve show Auriculas Mr. Charles Turner was first with the following kinds, all in admirable condition, viz.:—Ann Smith (Smith), Oberon (Turner), Portia (Turner), Lovely Ann (Olliver), Glory (Taylor), General Neill (Trail), Charles Perry (Turner), Prince Albert (Lewin), Meta (Turner), Drake Lewis (Turner), Alderman Wisbey (Headley), and Col. Champneys (Turner). Mr. James furnished a group of small but well-grown plants. In the class for six varieties, Mr. Douglas had a well-arranged stand, in which we remarked Charles Napier (Lightbody), General Neill (Trail), Topsey (Ray), John Waterston (Cunningham), Robert Trail (Lightbody), and Alderman Wisbey (Turner): the Rev. H. H. Dombrain was second with well-bloomed examples of General Neill (Trail), Waterloo (Hogg), Col. Champneys (Turner), Pizarro (Campbell), Apollo (Dickson), and Conqueror (Popplewell). In the class for twelve Alpine and fancy Auriculas, Mr. Turner had a very even and well-grown group. Mr. Douglas, Mr. Dean, and Mr. James had also well-grown collections. Some very pretty gold-laced Polyanthuses came from Mr. Turner, Mr. T. Pestridge, Mr. Hooper, and Mr. J. Odell, the varieties, and especially those staged by Mr. Pestridge, being very brightly coloured and distinct. Mr. R. Dean sent a very attractive group of Polyanthuses, among which we observed White Bedder, creamy-white, with a yellow eye; Conqueror, crimson, with a bright yellow eye; The Bride, white, with a yellow eye; Yellow Bedder, yellow, with an orange eye; and Viceroy, sulphur, with an orange eye, these being very distinct and beautiful. Mr. Douglas contributed an attractive group of white, lilac, and crimson varieties of Primula amœna, and some large, well-formed, and richly-coloured Pansy blooms came from Mr. Hooper, of Bath.

Miscellaneous subjects.—Messrs. Rollisson, of Tooting, furnished a large and attractive group of standard Azaleas, Orchids, choice Palms and Ferns, to which an extra prize was awarded. Mr. B. S. Williams also contributed a well-arranged collection of Orchids, Ferns, Palms, Pitcher Plants, and other novelties, to which a similar award was made. Messrs. Standish & Co. sent choice groups of cut Roses and decorative plants, among which were specimens of Adiantum gracillimum, A. Farleyeuse, and Trichomanes demissum, and some large potfuls of Lily-of-the-Valley, admirable examples of good culture. Mr. Charles Noble, of Bagshot, staged a group of Clematis, among which we noticed several new and distinct varieties. Kelpie's Bride is an eight-sepalled free-flowering Clematis, with lustrous satiny white segments; Madlle. Tarriani is rather smaller, with rose-pink segments; President is dark-bluish purple; Proteus is, as its name infers, a very variable form, having double or semi-double flowers of a dull greenish-purple colour; Daniel Deronda is a new variety in the way of President, but rather lighter in colour. Mr. H. Bennett, of Stapleford, sent a choice group of new Roses, including Cleopatra, a new seedling Hybrid Perpetual, of good form, with close, revolute, bright, rosy petals; Marie Guillot, a new white Tea; Perle des Jardins, a deep sulphur, Tea-scented variety, very chaste in the bud state; and the new salmon Tea, Jean Ducher. Messrs. Cutbush & Sons sent an attractive group of Camellias, Palms, and other decorative plants. Messrs. W. Paul & Sons, of Waltham Cross, sent a very large group of pot Roses in bloom, backed by pyramidal Ivies in pots, and fringed in front with tricolor, Zonal, and other Pelargoniums.

Fruit.—In the class for two clusters of Grapes, new or old, Mr. Sage, gardener to Earl Brownlow, Ashridge, was first with superb clusters of Black Alicante; Mr. J. Allward, gardener to J. G. Barclay, of Hatfield, being second, with good Lady Downes; Mr. H. Folkes was third, also with Black Alicante; and Mr. J. Hepper, the Elms, Acton, and Mr. E. J. Miles, gardener to Lord Carington, Wycombe Abbey, had extra prizes awarded for new forced clusters of Black Hamburgs in good condition. Mr. G. T. Miles had a second prize in the open class for new or old Grapes, with early forced Foster's Seedling; while Mr. Hill, of Keele Hall, had an extra award for well-kept bunches of Black Alicante.

Pines.—These were confined to twelve splendid examples of imported smooth Cayennes from St. Michaels, sent by Messrs. Webber & Co., Covent Garden. These were in every way noble fruit, weighing from 5 to 8 lbs., and perfect in form and colour; indeed, with such superb fruit in the market at this season it is not difficult to see why home-grown fruit cannot possibly compete with these either in quality or price.

Strawberries.—These were represented by three good dishes of fifty fruits, the first prize being awarded to Mr. A. Phillips, gardener to A. Moss, Esq., Chadwell; Mr. Ward, gardener to Earl Radnor, being second; and Mr. George Sage, third. The varieties were—Sir C. Napier, Sir J. Paxton, President, Princess Dagmar, and Keen's Seedling.

Cucumbers.—These were represented by nine brace of good average quality, the first prize being awarded to Mr. E. Cherry, of Leigham-court Road, Streatham, for a long-necked dull green variety named The Hero; Mr. Bates, of Appleby Hall Gardens, Atherstone, was second with Appleby Favourite; and Mr. W. Rapley, of Clapham, third with very large and coarse examples of Tender and True.

Souvenir du Congress Pear.—At the recent meeting of the Western New York Horticultural Society, Mr. Geo. Ellwanger said: "After several years fruiting we can say that for large size, beautiful form and colour, it is without a rival among recent introductions."

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> "This is an art
> Which does mend Nature : change it rather : but
> The Art itself is Nature."—SHAKESPEARE.

ORCHIDS FOR GENERAL CULTIVATION.

THOSE who have had anything to do with Orchids for any length of time cannot fail to have noticed the increasing favour with which this beautiful class of plants has been looked upon of late years by lovers of flowers. Fifteen or twenty years ago large collections of Orchids were very limited in number, while small collections of them, such as we frequently meet with nowadays, were almost unknown. The chief reason of this was that they were supposed to be more difficult to manage than most other plants, that they required a very high temperature in which to grow them, and that none but those who were well acquainted with their management could hope to succeed in their culture. The exhibitions then showed as good Orchids as those shown at the present day, but they were chiefly large-growing showy kinds, not easily affected by heat, our smaller-growing cool-house gems being seldom met with. Some, even then, talked in favour of a cool house; but it would seem that the 50° spoken of for a cool house Orchid was seldom interpreted to be the same as that recommended for other plants, for the thermometer was oftener found at 70° than at 50°. There are cases in which amateurs, unaided, commenced the culture of these plants with little or no knowledge of their habits and requirements; and the success of the few who had begun in this way encouraged others; the lowering of the price, in consequence of numerous importations, also helped to popularise Orchids. I cannot call to mind a single instance of failure in the case of any one who had thus undertaken the growing of Orchids, although sometimes experience has been bought at the expense of an odd plant or two; amateurs have invariably found that as their collections grew larger, so did the knowledge of their requirements, and, what is equally essential, their love for them has also increased. The knowledge that Orchids do not require so much heat as was at one time considered necessary, has also given a fresh impetus to their cultivation. It has been known for some years past that the very means formerly employed in the culture of some of the more beautiful Orchids, such as Odontoglossum Alexandræ, O. Pescatorei, O. nævium, the Masdevallias, and others, have had the effect of banishing them from collections, and this has led many to try cool treatment. Many of those who undertook Orchid growing for the first time commenced it under anything but bright prospects. One cultivator with whom I am acquainted, unaided except by a few hints given from time to time by myself, began his collection in a small suburban conservatory; nevertheless, his plants one and all have done remarkably well, and he has now an excellent collection. Another, unassisted, successfully began Orchid culture in his Fern-house; and I could advert to many instances of a similar kind to show that Orchid growing is fast advancing in public favour; in short, there are now scores of Orchid-growers for every one that existed a dozen years ago. Seeing, therefore, that there are so many new growers, so many beginners, so to speak, in Orchid culture who are always glad of a little advice on the subject, I purpose furnishing a few remarks from time to time on such cultural matters as my experience enables me to do; and as a forecast of what may follow, let us now allude to

Shading.

While we cannot be too grateful to collectors for any information which they may furnish respecting the habits, peculiarities, and surroundings of Orchids in their native habitats, it becomes everyone, before putting information thus acquired into practice, to consider carefully how far it would be practicable under their particular circumstances. From such sources we learn that many of the Lælias, the Guatemalan and Mexican Odontoglossums and Oncidiums are found growing in the full blaze of the sun, and hence it has been inferred that these plants do not require shading, but that is a mistake. I am aware that in one or two instances where large batches of a few kinds were growing together, they were got through the summer with little or no shading, chiefly owing to the construction and situation of the house, the care taken in giving air, and that they appeared to be benefited by the treatment; but my experience has been unfavourable to such a course, particularly when tried in the case of an amateur's collection, in which plants of different habits are mixed together. Orchids growing in their native habitats, even if exposed to full sunshine, have the advantage of being in exactly the proper condition to enable them to withstand its effects; they have also a free circulation of air continually playing around them, and growing, as many of them do, on the larger branches of trees, they have at least a few twigs above them, and these, by constantly changing their relative positions, owing to wind waving, prevent the plants from being scorched. Under glass the case is very different; the plants themselves are motionless, so is the air, or nearly so, and our summer not being their summer, they are unprepared to withstand the bright rays of the sun, particularly coming upon them through glass; what they want is all the light which they can get, not to be burned by the sun. Could any advocate for growing Orchids without shading stand perfectly motionless in a close house facing the sun for about ten minutes, he would probably alter his opinions in that respect. It cannot be too distinctly understood that every house in which Orchids are grown should be shaded; the next question is what sort of shading should we employ. Some speak favourably of colouring the glass late in spring, and leaving the colouring matter on till winter, but against that there are insurmountable objections. In the first place, the colouring matter being on the glass day and night, bright days anddull days alike, excludes much of the light which is so essential to the well-being of the plants. It also wears off in places where it is most needed, and it is at least but a clumsy makeshift, only to be recommended where movable shading cannot be employed, or to afford shade where blinds do not meet. The kind of shading generally used throughout Belgium, consisting of stout square laths or pieces of wood woven together with cord, the distance between each lath being about its own thickness, answers admirably there; but in England, where even in summer we often have a period too bright to permit of our dispensing with blinds, and yet not bright enough to warrant such heavy shading it would not be satisfactory. A plan of shading the glass obliquely by means of fixed wooden shades is to be tried in the Wellington Nurseries this summer, and it looks as if it would be successful; but in the meantime we must employ to the canvas roller blind, which should be so arranged that by means of supports fixed to the outside of the house it does not rest on the glass. Thus managed a current of air passes between the blind and the glass, by which the temperature of the house is kept in a condition suitable to the plants. Care should also be taken in selecting the material for the blinds to procure it of a sufficiently close texture, but not so thick as to exclude much light. The person entrusted with the care of the shading should also be informed that it is not put there to be let down in the morning and drawn up again in the evening in a mere routine fashion, but it is to be let down only when it is required to protect the plants from the sun's rays, and drawn up by degrees as they go off the house.

JAMES O'BRIEN.

THE VINE PEST IN LONDON GARDENS.

THE greatest pest that has ever invaded the gardens and vineyards of Europe is at our door. The Vine pest (Phylloxera) which has destroyed so much valuable property in French vineyards, is slowly and unobserved working destruction in some of the best-managed gardens in this country. Mr. John Wilmot's market garden at Isleworth is second to no other in the country as a fruit garden, and it is infested with it. The finest vineries about London are those in Baron Rothschild's gardens at Gunnersbury, and there are none more skilfully managed; yet here the Phylloxera has laid fatal hold of one of the finest plantations of Vines that existed. The pest is the worst with which we have ever had to deal, not only from its destructive powers, but from the fact that its presence is not visible to the naked eye, and that it seems to get thoroughly established on the Vines before much harm is noticed. It is supposed to be established in thousands of vineries in England now where no one suspects its presence. The Vines may to the ordinary observer seem in fair health, yet their roots may be a mass of the small knots which mark so clearly the presence of the enemy. There comes a time, however—after the pest has been at work for a few years—when growth almost ceases, and the berries drop off just about the time they ought to be beginning to colour. When we gave the life-history, remedies, and all that is known concerning the Phylloxera, we did not imagine there would be such practical demand for the information in this country, though an isolated case or two had been published; now there is reason to believe that it has become a real danger to every Vine-grower. The natural history of this pest, illustrated with many accurate engravings, will be found in Vol. VII., p. 158, of The Garden.

LAYING OUT SMALL GARDENS.

Volumes have been written upon landscape gardening—but we sometimes think that such works are of benefit chiefly to those who need them the least—and that no rules, however explicit, can guide a person in laying out and planting grounds, who has not a natural love of plants and a natural taste to assist in their selection and arrangement. The shortest distance between two points—a straight line—is the very best direction for streets or the limits of property; but it ought never to describe the boundaries of sylvan walks, of flower-beds, or of the lawn. Nature abhors straight lines. How beautiful soever may be the trees, shrubs, and flowers, and how skilful soever their display—straight marginal lines give a laboured, artificial look that it is the first aim of the good gardener to conceal. Not to stumble over the post while we avoid the pillar—lines that are too curved are also objectionable. The walk or carriage-drive leading to the public road should, of all paths, be the most direct; and in these any curve sufficiently decided to lead one perceptibly out of his way and suggest the wish to "cut across" should be avoided. In by-paths, leading to shady nooks, rock-works, rustic arbours—the curves, if only concealed by foliage so that their entire outline does not present itself to view, may crook without limit. The impression that we do not know whither we are going, or to what beautiful surprises we are being led by these obscure paths, if ever so faintly produced, is one of the best proofs of taste and skill. Arranging flower-beds, walks, grass-plots, trees, shrubs, mounds, vases, and the like in pairs is another senseless proceeding, as if every object were so unfinished in itself that it must have a counterpart similarly placed to perfect it. But if we adopt the ungeometrical style of gardening, as there are no rectangles that require sentinels stationed in every corner—the family of twins will be likely to receive at the outset "marked coldness." In distributing plants, let us avoid dotting the ground at regular distances, as if it were laid out in squares, and each square were allotted one tree or shrub for its centre and only ornament. The effect is meaningless, and far more distastefully so in the indefinite than in the rectilinear plan, since in the latter it is in accordance with everything else. Groups of trees and shrubs of varying sizes (always proportionate to the extent of the grounds) may be placed here and there, inclining on the whole, however, not to obstruct the view from those parts of the dwelling most frequented, and yet so placed as to conceal, except by glimpses, as far as possible the public road and all boundary lines, so that the actual termination of the ground in all directions is obscured, and one may revel in fancied seclusion. These groups must not, however, be planted as if they were one huge tree, but in some instances connect with other groups—while occasionally they may be relieved by lower-growing specimens in the immediate vicinity. But of all violations of susceptibility to all that is beautiful—to delicacy of feeling and good judgment, the introduction of statuary to the grounds about one's home is the most absurd. Bronzed animals, such as deer, dogs—or even lions and panthers—may, if placed in thickets or half exposed, be admitted; but white, nude statues of gods, goddesses, or mythical heroes, flaunted out in the broiling sun, or left to freeze and thaw during winter's snows, are painfully inappropriate. Who ever did select his favourite spot near one of them? Their general aspect is not reposeful—and we should select our nook so that many trees and shrubs might intervene to exclude these unhappy, friendless things from view ere we gave ourselves over to balmy, perfumed air—the deep shadows and the—the other enchantments of summer nights and fair gardens

In selecting plants, our first thoughts should be about their hardiness, especially if a professional gardener be not employed, and the proprietor is unable or unwilling to give, or is incapable of giving, discriminating attention himself. Trees not perfectly hardy for the locality may thrive for a season or so; but they will be sooner or later killed or so injured as to destroy their beauty. New and alluring Evergreens, whose hardiness has not been thoroughly tested, are often causes of disappointment. We cannot afford to ascertain in the garden by experiment whether trees are hardy or not. It takes too long for them to grow—or rather, too long for others to grow to fill their gap. Arrange flower-beds in a south or south-east exposure. Do not attempt complicated designs, or even angular figures, of any description. Reserve all study upon this subject for the selection of carpets and oil-cloths—wall-paper and frescoing. Make the beds conform to the paths, leaving grassy margins between, always wider than the lawn-mower. If flower-beds are cut out of the turf, it is quite easy to change them from one shape to another—to make them larger or smaller, or to re-turf and construct new ones in different places. Unless the ground is naturally rich, we are well rewarded by removing 18 in. of earth, and replacing it with leaf-mould and loam—old manure and sand, in the proportions needed. All should be thoroughly intermixed and leveled smooth, ready to receive the plants. Box and other edgings are very pretty, if well kept—but there is nothing to compare with a clean, velvety turf for margins. The best floral effects are only obtainable when the flower-beds are contiguous. To soften the effect of too much colour, make the tropical bed central, and here display by the use of such plants as the Wigandia, Rheum, Dracæna, Palm, Hibiscus, Catalpa, Agave, Yucca, Aralia, Solanum, Musa (Ensete), Ficus—colours and foliage that will lend dignity and character to all. An occasional low-growing tree, such as the Cratægus, Pavia, Chionanthus, Rhus, Gleditschia, Cornus, Cercis, Alnus, Magnolia, Salisburia—or shapely shrubs, as Spiræa, Rhododendron, Azalea, Calycanthus, Cydonia, Hydrangea, Mahonia, would be in keeping. Whatever subjects be selected—whatever plan decided upon for the flower-beds—let us not forget that "everywhere Nature sets her flowers in clouds of refreshing green."—E. S. Carman, in "Moore's Rural New Yorker." [Good advice applicable to all countries. The "tropical bed," which may seem unattainable by many in cold districts, or where there are dull and chilly summers, is possible everywhere by the employment and annual cutting down of hardy shrubs and trees with fine foliage, such as Paulownia, Ailantus, Rhus glabra laciniata, Spiræa Lindleyana, and many others. The foliage on one year's suckers of these often in the London district proves more "tropical" in aspect than that on tender trees that make one year's growth only.]

LOCUSTS IN SPAIN.

The "Times" correspondent gives the following startling account of the ravages committed by locusts on vegetation in countries not far from us:—I will give you now in contrast painful enough with the thought of the glorious growing cereal crops, the details of the plague of locusts now threatening Spain. The provinces infested are those of Cartagena, La Mancha, Ciudad Real, Estremadura (Badajoz), Toledo, and Salamanca, by which it will be seen that the plague extends from Cartagena to the north-west, passing south of Madrid, and thence, jutting on the confines of Portugal, northward to Salamanca. The popular account of the locust in Spain as just given to me by a gentleman from Linares, in the province of Jaen, is as follows:—"The locusts have amounted to a plague in Spain for not more than eight or nine years; they perpetuate their race by eggs, for the reception of which they make, with their mandibles, little canutos, or hollow tubes, like kernels of Pine Nuts; in these they deposit the eggs, carefully close them up, and cement them over all so perfectly that they can resist damp. These little tubes they press and fasten into the earth, until hidden. They always choose the hardest earth, and that which, in their belief, will be untouched by the plough. They lay the eggs in August and September, and these lie in earth until April, when they begin to develop. The popular fallacy in Spain is that every egg takes five years to hatch. The eggs are so small that they cannot be counted, but each canuto, or case, contains upwards of 100 eggs. When the egg first develops itself, it is called en estado de mosquito, which shows that its size is insignificant, and like a young mosquito. When fully developed the langosta has four wings, the two inside not serving for flight; it has six feet, two of which are longer than the rest, and furnished, for springing, with a saw of sharp points. The length of the locust in Spain varies from one to four pulgados (a pulgado is equal to 1 in., or rather less). The plans in vogue for destroying these animals are (1) to sweep them, with huge brooms and branches of trees into large bags called 'butrones,' and then bury them in deep pits; (2) to open trenches transversely in their line of march, and to fill them in with earth when the insects are within them. But all operations against the locust must be performed in the first and earliest stage of its development." The province of Jaen, bordering on La Mancha, is at times, and slightly so now, infested with locusts. The plague of locusts threatens to assume serious proportions. Although rain has fallen heavily in Seville and Cadiz provinces, yet the drought has been great in the West Midland districts. Now is the one and only moment at which to extirpate these pests, as they are in their first stage of development, as yet unhatched fully by the sun. Once let the full force of the spring sun smile on them, and these myriad hosts will start into life, and "make the Garden of Eden a desolate wilderness." So quickly does heat hatch them that if you place a canuto of eggs in your pocket, the heat from the body will bring them all into life in twelve hours. The following orders and telegrams from the Madrid papers will give some idea of the extent of the mischief anticipated. On March 28 appears this :—"Royal Order.—All commanders of garrisons to spare all the troops possible to aid in extirpating the locusts." On April 1, "The locust has appeared in the province of Cadiz, near Medina-Sidonia." On April 5, "The locust threatens to destroy all the cereal crops of Salamanca province." On April 5, "The 1000 troops sent to Badajoz (Estremadura) are not enough; we need at least 4000 soldiers." On April 7, a Royal decree voting 500,000 pesetas for the extinction of the locusts and commanding all Town Councils to pay to the soldiers engaged in the work as follows :—To each private 5d. daily, each corporal, 7½d., and each sergeant 10d., in addition to their ordinary pay. On April 8 General Primo de Riviera proposed to Government to use the German method of digging trenches and turning in herds of pigs to eat the locusts. On the same day Senor Mariscal, a deputy, proposed a second, and Senor Seco de Lucena a third way of extirpating these pests—namely, by asphyxia. Earnestly we all hope that the exertions of the Government—and well and promptly has it bestirred itself on this occasion—in sending troops to the infested provinces will prevent the destruction of the growing cereal crops. These flying hordes eat every green thing, except the leaf and fruit of the Red Tomato, and so great are their numbers that, only two years ago a train was stopped in the province of La Mancha or Cindad Real by masses of these insects piled up, like driven snow, along and upon the line.

Centigrade and Fahrenheit.—The Centigrade thermometrical scale is now becoming so frequently used in English books that a short method of turning incomprehensible Centigrade into intelligible Fahrenheit will be a desideratum. The rule is simple, and the operation, after a little practice, may be performed mentally. All one has to do is to double the Centigrade number, take a tenth away from it, and add 32 to the number obtained. Let us take 60° Centigrade. Twice 60 is 120, take one-tenth away, *i.e.* 12, and 108 remains, which, added to 32, makes 140, which is the answer. Taking a more difficult number, 32 Centigrade, we double and obtain 64, from which we take 6.4, leaving 57.6, to which we add 32, the otal being 89.6.

A Tree Protector.—A correspondent of one of the morning papers remarks that Coburg is famous for old shady trees. These are to be seen, not alone on the borders of the city and marketing the highways, but they dot, either singly or in groups, the fertile fields and fruitful meadows in every direction, attracting the eye and adding greatly to the beauty of the landscape. One might naturally infer that the people have a greater love for Nature's charms than is commonly the case, or this fine timber would long since have been turned into money. But these sylvan ornaments are preserved through the wise forethought and liberality of the deceased father of the reigning Duke. The old ruler of the Duchy was fond of trees, and whenever he saw a group or a single one that ought to be spared as a "thing of beauty," he took measures to make the same a "joy for ever" by purchasing the fee-simple outright from the owner. Therefore there are many grand old monarchs of the forest existing, either as monuments of his loving care or else enjoying for their lifetime a pension from his bounty.

Window Plants in Norway.—To see plants in windows in perfection ,the northern parts of Norway, such as the towns of Molde and Trondhjem, should be visited early in the summer. The people have a passionate love for flowers, and tend those in their houses almost as if they were children. In some places I have seen miniature rakes with ivory backs for breaking-up the top of the soil in the pots, and all the other little cultural accessories are equally perfect. Then, the plants have no coal-smoke with which to contend, and they stand on inside window-sills, fully exposed to the cheering effects of almost perpetual sun-light—not that the sun always shines on them, but his rays are almost always vivifying the air. There is no night during summer in the latitude of which I speak. Carpets are also taken up when the warm weather sets in, so that the plants have no dust from which to suffer. Certainly I never saw more beautiful flowers at any horticultural show than those to be seen in Norwegian windows. The kinds grown are our ordinary greenhouse plants and a few Roses. —P.

Tea Roses near London.—Tea Roses are so much more at home in mild and sea-shore districts that it is far from common to see them well grown in open beds in London or midland gardens. It is, therefore, worthy of note that there are in the gardens at Gunnersbury many large beds of the finest Tea Roses, mostly one kind in a bed, and they thrive admirably. It is, however, difficult to keep them through the winter without suffering, and blanks have to be filled up in spring in the case of the more tender kinds. This trouble is, however, well repaid by the abundant and long-continued supplies of flower. The Roses are pegged down, so that in summer and autumn they quite cover the beds.—R.

Primula cortusoides amœna for Night Decoration.—In a group of this Primrose, shown at the Aquarium Exhibition last week, the rich tints of the flowers were converted under gaslight to a deep-glowing magenta, that was remarkably effective. As Primroses of this class are easily grown and propagated, this fact is well worthy the attention of decorative florists. Some colours that look gay in the daytime lose all their beauty when subjected to gaslight. Flowers, that range from white through tints of pink, rose, magenta, and red up to crimson, are most effective under artificial light, while yellows and blues are not. The cortusoides amœna section of Primulas, when well grown, make beautiful exhibition plants, a fact which managers of April shows will do well to bear in mind.—D.

Violets in Pots.—The efforts made to obtain collections of these at the recent show at the Westminster Aquarium was but partially successful, only one kind being exhibited, viz., the Neapolitan. April is too late for single varieties of the Violet—generally the sweetest scented—but there are several fine double kinds that are both sweet, and, when well-flowered, very handsome. The Giantess and King of Violets are rich dark blues, the flowers of which are sweet and the plants good in habit. The finest double white is Queen of Violets, a variety that is free, and one which has very large massive blooms. The Neapolitan is a fine showy kind, and closely allied to it, although not quite so robust is the Princess Louise—a variety that flowers freely, and does well in pots. V. rubra plena is a fine double red, and makes a good pot variety. Here, therefore, are only half-a-dozen kinds, and even these do not include all the double sorts. A class for six pots of Violets should have, as a condition, that not less than three sorts should be shown. A similar class for single kinds might well be introduced at March shows; as, thanks to Mr. Lee, we have some very fine single kinds that do well in pots, and which are deliciously scented.—A. D.

How Doctors Differ.—In the vegetable kingdom there are several substances that possess the double quality of food and medicine, and as such might be usefully employed in therapeutics. Among the vegetables that possess the valuable property referred to Water Cress may be mentioned. According to an analysis by M. Chatin, Director of the School of Pharmacy of Paris, and present President of the Academy of Medicine, Water Cress contains :—1, a sulpho-nitrogenous essential oil; 2, a bitter extract; 3, iodine; 4, iron; 5, phosphates, water, and some other salts. As medicine the Water Cress has been vaunted for its efficacy in all cases in which the digestive organs are weak, in cachexia, in scurvy, in scrofula and lymphatism; it has even been prescribed as a cure for phthisis. The medicinal principles which it contains are more or less abundant according to the culture or maturity of the plant. Thus when the plant is in flower they are in greater quantity than before that condition; the essential oil increases according to the quantity of the sun's rays to which the plant is subjected. The proper culture of Water Cress develops in it the bitter and tonic principles, and the phosphates will be found in proportion to the manure employed. Finally, the quantity of iron will depend upon the richness of the water in which the cress is planted. As food Water Cress ought to be used in its green or uncooked state, in the form of salad or without any seasoning. Water Cress enters largely into the composition of the "sirop antiscorbutique" of the French Pharmacopœia. —"British Medical Journal." [Some time ago we published a paragraph in which it was stated that so high an authority as Sir Benjamin Brodie thought Water Cress unwholesome.]

Dr. Engelmann's notes on Agave will be found in the "Transactions of the Academy of Sciences of St. Louis, Missouri," for Dec., 1875. The memoir contains a systematic enumeration of the North American species, in which several novelties are now first described.

NOTES OF THE WEEK.

—— The lately-introduced Officinal Rhubarb (Rheum officinale) would seem, from the vigorous way in which it is coming up at Kew, to be of some merit as a hardy fine-leaved plant, as, indeed, are most of its family. It, however, seems exceptionally early in producing large bouquets of ample leaves.

—— The finest of the large-leaved Saxifrages (Megasea) is the deep rosy-purple Saxifraga purpurascens now in bloom in the Wellington nurseries. It will form, when grown in pots, a lovely plant for greenhouse decoration, as well as for the rock-garden. It is as yet very seldom seen in good collections.

—— The backward season seems to have a marked effect on the supplies of Asparagus, which, instead of becoming cheaper as is usual as the season advances, have since Easter advanced very considerably in price. This is mainly owing to a check in the very extensive supplies that now come to us from Toulouse and its neighbourhood.

—— Much has of late been said as to the excellence of the St. Michaels Pine-apples, and many have, in consequence of the superior quality of these fruits in winter, thought of giving up Pine-apple culture. It may be as well to state that the St. Michaels supply ceases about the end of the present month, and that there is likely to be as large a demand as ever for English-grown Pine-apples ripening in May and June.

—— We learn from Mr. Arthur Turner that Cox's Orange Pippin has been kept at Slough in perfect condition in a wine cellar up to the present date. It is now a long time since fruits of this variety fit to eat have been seen in our markets. It is very probable we shall have to modify our notions as to construction of fruit rooms. The cellar fruit room is no doubt far better than our raised and very often warm ones.

—— A beautiful wall plant is the Shamrock Pea (Parochetus communis); it is a creeping perennial not often seen in cultivation, and very seldom flowers abundantly. If induced to take root on an old wall or one of those "Alpine walls" illustrated in "Alpine Flowers," it thrives better than in any other position, and its delicate shoots hang gracefully down, laden with charming blue Pea-like flowers.—W. J.

—— Many of the samples of White Almerian Grapes now in our markets have been preserved throughout the winter in barrels of cork dust. Some samples that we have examined have been in cellars in Covent Garden Market in barrels for nearly seven months, and they turn out with very few damaged berries. This fact is not, we think, of much importance as regards the keeping Grapes in England, as so much depends on the condition of the Almerian Grape when gathered, and the variety seems also a long-keeping one.

—— The fine collection of Orchids belonging to Mr. Philbrick, Avenue Road, Regent's Park, is at present particularly showy, many plants being in flower. Most of the varieties of Phalænopsis are flowering in quantity; of the lovely Dendrobium lituiflorum there are several plants; also the Roman red-lipped snow-white D. Jamesianum; and perhaps the finest variety of D. crassinode ever seen. D. thyrsiflorum, and a great many other varieties are masses of bloom; and there are also some fine well-bloomed Saccolabiums, likewise Aerides Fieldingii and Vandas in profusion, as well as the rare Cymbidium eburneum, and many other plants. In the cool house we found the scarlet-flowered Ada aurantiaca, many fine examples of Odontoglossum Alexandræ, O. Pescatorei, O. triumphans, and various Oncidiums in full bloom; also the rarer Masdevallias throwing up flower-spikes thickly—all marvels of beauty and good culture.

—— Among Orchids now in bloom in Messrs. Veitch's nursery at Chelsea, we may note the new Cypripedium Druryi, which looks like a hybrid between C. Parishii and C. villosum, having solitary greenish flowers, with a dark band down the centre of the sepals and petals. Cypripedium vexillarium, a cross between C. barbatum and C. Fairrieanum, also bears a two-flowered spike. Another hybrid, Lælia flammea, bears a two-flowered spike of rich orange-sepalled flowers, having a purple lip. It is the result of a cross effected between L. cinnabarina and L. Pilcheri, and is very beautiful and distinct. Several very large-flowered, well-formed varieties of Pescatore's Odontoglossum are in bloom, and many plants of O. vexillarium are throwing up strong flower-spikes, while a plant of O. nævium bears twenty-four spikes, each bearing from ten to twelve flowers, which are, however, as yet unexpanded. A plant of the larger variety of the last-named species bears nineteen strong spikes, and the choice golden-flowered Oncids, O. concolor and O. Marshallianum are both represented by several flowering plants. The last-named bears enormous blossoms on a slender branched spike, and as seen suspended beneath the roof of the house, they look like great golden butterflies. A specimen of the little rosy-flowered Saccolabium ampullaceum bears fourteen spikes, and is just now very pretty; it is growing on a Teak-wood raft, with its roots merely surrounded by a little fresh Sphagnum Moss.

—— Among cut flowers now in season, perhaps the greatest favourites are those of forced Pinks; of these one of the best is Miss Joliffe, a rosy-salmon variety of free habit; and among white kinds, Lady Blanche is one of the best. Both kinds are largely grown for market, and well repay careful culture.

—— One of the most beautiful Orchids we have for a long time seen is the fine variety of Odontoglossum roseum, now in bloom in Lord Londesborough's collection at Norbiton. It has the colour of an Alpine Phlox, and the grace of flower-stem of the Solomon's Seal, being withal very dwarf and neat in habit.

—— Some 200 plants of the new and beautiful Odontoglossum cirrhosum are to be sold at Stevens's on Monday next. This fine Odontoglossum was described in The Garden for April 8th, p. 348; a plant of it in flower is to be exhibited at the sale; therefore all those present will be enabled to judge for themselves as to its merits.

—— There is considerable variety among the names of the Grape Hyacinths now in flower in our gardens, but very little real distinctness of aspect, especially when seen a few yards off. The most distinct plant of this race that we have seen for some time is that known as Botryanthus szovitzianus now in bloom in the Exotic Nursery, Tooting. It is a very beautiful hardy plant.

—— The single Kerria, a rare plant compared with the double kind known well in most gardens, is a shrub of high merit, exceedingly graceful in habit when grown untrained, and very tractable as a wall plant wherever a wall is an aid to its blooming. It bears numerous rich golden flowers, and is a more beautiful plant than the old double kind. There is a plant of it on one of the walls at Kew.

—— Mr. Douglas, Loxford Hall, has sent us a beautiful truss of Auricula Topsy (Kay), one of the most distinct and beautiful of all purple selfs, the body colour being of the richest velvety description, and the paste or margin surrounding the eye of the purest white. This variety was one of the most effective at the Aquarium Show the other day, and well deserves the attention of all interested in these charming old-fashioned flowers.

—— Azaleas and greenhouse Rhododendrons are now very beautiful in the Royal Exotic Nursery, Chelsea, a large specimen of R. Countess of Haddington bearing several hundreds of large bell-shaped rosy-white flowers. Among the Azaleas we noted Crispiflora, an old but very distinct and effective variety, with frilled petals, and a small plant of Carl Enke, bearing rosy salmon-white edged blossoms.

—— It was only at the Westminster Aquarium show, the other day, that we saw the true character of Mr. Williams' new Adiantum gracillimum fully displayed in a huge specimen shown by Messrs. Standish. So far from the delicately-dissected leaves indicating any feebleness in the plant, the opposite is the case; it is extremely free and vigorous. It is thoroughly a variety of the oldest and most popular of our common stove Ferns (A. cuneatum), one of the most valuable Ferns ever introduced to cultivation.

—— Among the many plants forced for the sake of their flowers none are more acceptable than Lilacs, though frequently they are failures in gardens. About 600 bushes of Lilacs are forced every year by Mr. Denning, in Lord Londesborough's garden, at Norbiton, and of these plants under 2 ft. in height bear many trusses of flowers. The French variety, known as Charles X., is much used for forcing. These Lilacs are grown in pots from year to year, as otherwise it would be impossible to get small plants into such a free-flowering condition.

A Planted Boulevard for London.—Mr. J. Rahles, a member of the St. Pancras Vestry, some time since presented a petition to that local body in favour of planting the Camden Road, three miles in length, as a boulevard. The matter was referred to the Works Committee, who rejected the proposal, but Mr. Rahles determined to test the opinion of the Vestry by putting a notice of motion on the agenda paper to carry out the proposition. This motion came on yesterday, and was carried by a large majority. The matter was then referred to the chief surveyor to draw up agreements and make the necessary arrangements for carrying out the planting. It would be well if in some of these new street plantings in London other trees than the Plane were tried. Various others are suitable, and variety in trees is as desirable in cities as in woods.

THE FLOWER GARDEN.

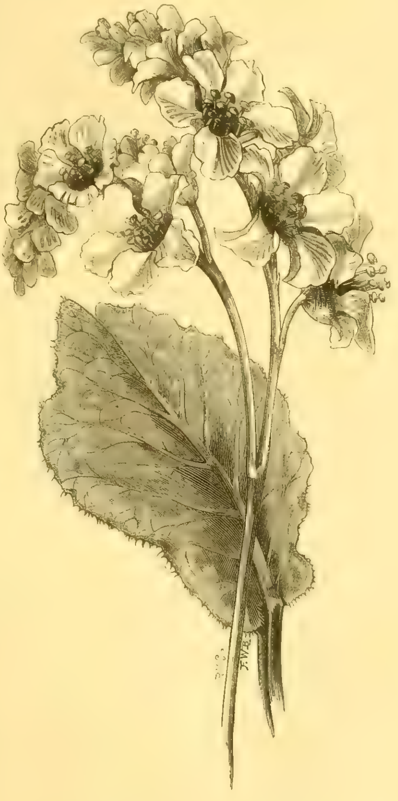
GENERAL STRACHEY'S SAXIFRAGE.

(SAXIFRAGA STRACHEYI.)

This Saxifrage is one of the large-leaved section distinguished by the sub-generic title of Megasea; with this section we have long been acquainted in old-fashioned gardens, its most popular representatives being the heart-leaved and broad-leaved kinds called S. cordifolia and S. crassifolia. The subject of our present illustration was discovered at a considerable altitude on the Himalaya Mountains by Major (now General) Strachey, and constitutes by no means the least in importance of the many interesting plants which he has been the means, not only of discovering, but also of introducing into our gardens. It has now been in cultivation some six years, and when I say so, be it understood I do not mean in general cultivation, for it is still a scarce plant, and to be met with only in botanical gardens and a few very select private collections; doubtless, in time, the fact that it possesses an inherent beauty of its own as a spring-blooming plant, and also a vigorous constitution and free-flowering habit, will render it equally abundant with its Siberian allies, to which I have before alluded. In Strachey's Saxifrage the leaves are developed from a strong and somewhat woody decumbent stem, rendered rough and scaly by the persistent attachment of the stipulaceous appendages which are developed from the inner side of the petioles, and from which the leaf itself appears to disarticulate after reaching maturity. The leaves are large, similar in size and also in their leathery consistency to those of S. crassifolia—nearly as broad as long—the margins slightly notched and ciliated, the colour of the ciliæ giving a pink outline to the leaf. These are in shape almost orbicular, glabrous, and shiny both above and below, the outline of the principal vein being well marked by depressions on the surface; in colour they are light green. The flowers are arranged in compound or branching cymes, somewhat scorpioid in character; these are supported on stout foot-stalks, which elevate them well above the mass of foliage. The calyx is of a crimson colour; the petals are of a light rosy-salmon tint at the margin, gradually shading into the deeper colour of the calyx-tube, giving the flowers a character specially distinctive from the others with which we are familiar in this section of the genus. As regards the marginal outline of the petals, they are irregularly undulate. Its closest ally is S. ciliata, from which it possesses the following well-marked distinctions:—A greater breadth of leaf as compared with the length; a more irregular arrangement of the leaves, which are supported on shorter foot-stalks, the blooming cymes being larger and more floriferous; and the plant as coming from a higher altitude (some 12,000 feet on the Himalayas) being hardier, and quite capable of standing our climate. It blooms in March, and should have in cultivation a special nook allotted to it, sheltered either by shrubs in the border or by protecting masses in the rockery, otherwise, if exposed to the bleak winds with which the month of March is usually and unhappily associated, the plant would soon be shorn of the delicacy and beauty of its blossoms. I have never succeeded in raising seeds of it yet, nor am I aware that others have been more successful; but this I know, that I generally have a goodly number of applicants for the first spare plant I have of it, and hence I infer that its beauty is pretty generally appreciated.

Jas. C. Niven.

Botanic Gardens, Hull.



General Strachey's Saxifrage.

GARDEN IVIES, THEIR USES AND CULTIVATION.*

The Garden Ivies are more useful than any one would imagine, judging by the little attention that is paid to them. Many are the fine old ruins and houses that are rendered verdant and attractive by means of Ivy. It is best known to us as a climber, although it may be grown in a variety of other ways. It will continue to climb as long as it has anything to which it can adhere; but when the summit has been reached, and it has no farther support, its nature seems to change; it ceases to emit its root-like claws, throws out branches horizontally, flowers, and fruits. Its flowering season is September and October; the berries ripen early in spring, and have a very effective appearance, hanging as they do in black clusters. One characteristic belonging to the Ivy is that when growing on a wall or old building, should it get severed from the ground, it will still live supported by its claws, which become veritable roots, adhering firmly to, and feeding on, the substance to which they cling. Can the Ivy be called a parasitical plant? Some say it is, but that is an opinion with which I cannot agree, for if when growing on a living tree it becomes, severed from the ground, it may live for a time, but it will not thrive if compelled to live on the bark alone; I have never seen a grand specimen of it on a living tree when cut off from its own roots. Ivy I believe to be hurtful to trees, for when once it obtains the mastery over them, it checks the flow of sap, robs them of light and air, the result being decay. The trees on which it grows best are the Oak and the Elm. In the grounds of Wimbledon House there is a fine old Pollard Oak almost entirely covered with Ivy, with which the tree has been killed. Some affirm that Ivy is injurious to buildings; such may be the case where in the course of years its root-like claws have penetrated the brickwork, as for instance, at Arundel Castle, which has been threatened with destruction owing to the inroads made on the walls by the Ivy with which they were, until recently, covered.

The uses to which Ivy may be put are numerous; in addition to its being one of the best plants for covering walls and palings, it has a good effect in pots under glass in winter; edgings for beds may be made of it, and nothing is more useful for covering the ground under trees. If plunged in beds in pots, with a piece of crock under them to keep out worms, it looks well in winter mixed with Yews or Hollies, when many shrubs are bare and leafless. Ivy may be propagated by means of seeds, cuttings, layers, and grafts. When the seeds are thoroughly ripe, gather them and sow them thickly on a bed of sandy soil, and keep the ground clear of weeds; when of sufficient size, plant them in rows in a nursery bed, and after they are strong enough, plant them out where they may be required. Variegated kinds rarely come true from seed, but they may be propagated by taking off young shoots 4 in. long, with some green in their leaves and inserting them in sandy soil under a hand-glass. Cuttings may be quickly struck by taking off young shoots from a wall to which they have attached themselves by their fleshy claws, and inserting them in pots or in the ground; if this be done in June or July they seldom fail to root. Long shoots may also be pegged down on any damp soil in the form of layers; they root quickly in old Cocoa-nut refuse. Ivy may also be increased as follows:—In July get some long cuttings, and, instead of putting them upright in pots, peg them firmly down all round on the soil; these will root at every joint, and as many plants can be made of them as may be desirable. Ivy may also be grafted with success. It will grow in any soil in the open ground, but for pots it requires good loam, manure, and leaf-mould, especially if desired to remain in the pots for any time. The large green-leaved and free-growing varieties thrive in a moist rich soil, but variegated kinds require material of a poorer character so as to retain their bright colours; if too richly fed they are liable to become green. If good variegated specimens be required, the soil most suitable for them is a light loam, mixed with brick rubbish. They should be treated as a matter of course in all respects as hardy plants, and be freely exposed to the weather. Different aspects give different colours; some of the dark deep shades are obtained by exposure on a damp north wall, while the richer blotches are better when fully exposed, but in all cases shelter and shade promote free growth and bring out the rich green hues. The best Ivies for walls are the fast-growing large-leaved kinds, viz., Hedera canariensis, algeriensis, and Rægneriana; the common English Hedera Helix looks neat and clings close, but grows much more slowly. The variegated kinds look well on walls also. When a wall is desired to be covered with Ivy, strong vigorous subjects should be obtained, and the ground forked up; plant them in April, giving them frequent attention in watering and nailing, until they attach themselves, when they will only require periodical examinations for the falling away of a few stray shoots. After the Ivy is thoroughly established it should be examined each year in March, and all leaves and laterals cut back to the stem, which operation will give the Ivy a bare appearance for a time, but it will afterwards push forward its leaves and have a neat and pleasing appearance during the remainder of the season.

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* Read by Mr. Alderman at the March meeting of the Wimbledon Gardeners' Improvement Society.

Ivy may be grown in a variety of forms, such as standards, bushes, pyramids, and umbrellas.

The vigorous green-leaved kinds make good standards. Strike the cuttings in pots in July and August, and keep them in a cold frame during winter; in April pick out those with straight leaders, and plant them out in well-manured loamy soil, keeping them trained to stakes, and in July pinch the side-shoots into two or three leaves; the next season cut the leaders back to the height required for the standard; let side-growths of the head push forward, and train them out so as to keep vigour in them, but pinch the side-shoots in so as not to let them take the lead, and the following season cut the leaders back to two or three buds. Follow this treatment for about four years, and good specimens fit to be planted in borders for ornament will assuredly be obtained; after they are in the borders, remove the side-shoots from the stem a few at a time, beginning at the bottom; the result will be a clean stem, and the head can be trained to any desired shape, or it may be left to grow at its will.

Pyramids are the easiest forms in which to train Ivies in pots. Take the young shoots upright by inserting a few stakes in the pots; let the soil be good loam and rotten manure, twine the side-shoots round the stakes, which will soon be furnished; in the autumn, after growth is finished, tie the stakes firmly together at the top; if the Ivies have grown freely, they will be of sufficient size to be effective, and may be kept in the same pots several years if during the summer the pots be plunged in rotten leaves or Cocoa-nut fibre refuse, and kept well watered; plants so treated make good specimens either for flower-beds or conservatory during winter.

Umbrellas may be formed by taking a shoot straight up, and training it out on a head of wirework, until the outline is covered; then pinch the side-shoots in, so as to form the head into a dense mass of foliage. The side-shoots from the stem must afterwards be removed, as previously stated. This style is useful in house decoration.

Bushes can be grown in pots of either the climbing or fruiting varieties. I have seen the yellow-berried variety (H. chrysocarpa) look beautiful in winter, with its bright berries and green foliage. It takes a long time to grow good bush specimens; they should never be pruned unless a strong shoot push out beyond the rest; in all respects they require the same treatment as the others. All fruiting varieties are useful in making bushes in pots for plunging in the flower garden during winter.

The following are some of the varieties with which I am acquainted, and they consist of the smallest and largest-leaved kinds in cultivation:—H. canariensis, algeriensis, Rægneriana, dentata, digitata, digitata nova, taurica, Donerailensis (minima) maculata, elegantissima, sagittæfolia, and chrysocarpa.

GARDEN VEGETATION IN MARCH.

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

During March we had a good deal of snow, rain, and wind, with frequent frosts, which proved a great hindrance to vegetation and an impediment to the performance of all out-of-door work. On twenty-one mornings the thermometer stood at or below the freezing point, indicating collectively 98°, the lowest markings being on the 13th, 16th, 17th, 19th, 20th, and 21st, when 23°, 25°, 24°, 25°, 23°, and 20°, were respectively indicated. The highest morning temperatures occurred on the 1st, 2nd, 3rd, 4th, 6th, and 30th, when 38°, 36°, 37°, 38°, 37°, and 38° were indicated, all being below the temperatures of January. During March, 1875, the thermometer was ten times at or below the freezing point, indicating in all 45° degrees of frost. The following Table shows the amount of frost that occurred during the months of March for the last thirteen years:—

1864	71°	1868	29°	1871	28°	1874	37°
1865	52°	1869	57°	1872	23°	1875	45°
1866	66°	1870	50°	1873	25°	1876	98°
1867	77°						

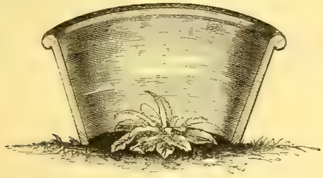
Herbaceous plants this year are rather behind the average as regards progress, and those which have flowered are far from being in a satisfactory condition, both February and March being much against them. The following is a list of spring plants, the dates of flowering of which are annually reported:

	1876.	1875.
Scilla bifolia major	March 2	March 14
Arabis albida	„ 5	Feb. 10
Tussilago alba	„ 8	„ 15
Mandragora officinalis	„ 12	„ 28
Iris reticulata	„ 13	March 19
Symphytum caucasicum	„ 15	„ 31
Narcissus pumilus	„ 15	„ 13
Scilla bifolia alba	„ 15	„ 17
Tussilago nivea	„ 18	„ 6
Muscari botryoides	„ 18	„ 26
Corydalis solida	„ 25	„ 23
Symplocarpus fœtidus	„ 25	„ 30
Erythronium Dens canis	„ 28	„ 21
Ribes sanguineum	„ 30	„ 30

In the rock garden seventy-four species were counted in flower on the 31st of March; among them the most conspicuous were Iris reticulata, Scilla sibirica, S. bifolia, S. b. major, S. b. alba, Sisyrinchium grandiflorum album, Gagea lutea, Helleborus argutifolius, Hepatica angulosa, and all the varieties of Hepatica triloba; also, the varieties of Saxifraga oppositifolia, Aubrietia grandiflora, Primula vulgaris rubra P. purpurea, P. denticulata, P. nivalis, and P. viscosa, Draba aizoides, Dondia Epipactis, Andromeda floribunda, Erica hybernica spicata, E. herbacea alba, and Epigæa repens. Up to the end of March no perceptible difference was noticed in the arborescent vegetation in the garden from what was observed at the end of January. Perhaps the most remarkable feature observed was that of certain Coniferous plants, which assume a brown hue during the late autumnal months, remaining in that condition all the winter, and which, as the season advances, pass into green, and finally into the golden tint peculiar to them, and which they retain during the summer months. In my report up to the 31st of January, I stated that, owing to the unusual mildness of that month, Thuja aurea, T. elegantissima, and others, had parted with their brown winter hue, and that they were, on the 31st of January, perfectly green. Since then the backward state of the weather, together with a series of low temperatures, has been the means of partially bringing back the brown tint, but not to the extent observed during the early winter months; still, a very perceptible brown hue is visible on each of them. It is now evident that many plants have suffered severely during the long and very changeable winter which we have had, particularly species belonging to the Natural Orders Cruciferæ and Caryophyllaceæ. It is somewhat remarkable that during the last three months we have had the thermometer on fifty-two mornings at and below the freezing-point, indicating altogether 314°; but, notwithstanding this low average, no ice at any one time has been seen at Edinburgh sufficiently strong for skating or curling purposes, nor yet have any of the frosts been sufficiently severe to reach the small vermin now in the ground, not even slugs, which at the present time are particularly numerous and destructive.

WARE'S SHELTER PANS.

In Mr. Ware's nurseries at Tottenham, where great numbers of choice young hardy plants are put out at all seasons, a shelter pan or pot, of which the wood-cut here given is a section, is found very useful. It is simply a low pot without a bottom, measuring about 8 in. across. When young plants of any particular value are first placed in the open air in spring, one of these is often placed over, or rather around it, and those who know how often young plants are killed or injured from various causes will easily understand how useful such contrivances are. They shelter the young plant from cutting or high winds from any quarter; they turn aside the browsing slug or snail. They may be so placed as to give a partial shade; and they protect the plants when a complete shade or protection is thrown over them. Such shelters also preserve a warmer atmosphere round the young plant than when it is fully exposed. When the plants are established and fine weather has set in, these contrivances are easily removed. The shelter pan is merely placed on the ground, not sunk in it. V.



Section of Shelter Pan.

Roses on Briers, and on their own Roots.—Where Brier stocks are used, young straight-stemmed ones, green and well-rooted from the hedge-rows, about two years old, are best, not those having heavy roots like a club. It is somewhat difficult to get the kind of Briers here alluded to, but they may be obtained by paying a little more money for them. He who confines himself to growing only standard and half standard Rose trees, must either bud them himself, or be under the necessity of buying them from the nurseryman, in order to fill up spaces made in winter by frost. Roses on the Manetti, when planted about 3 in. below the worked part, become rooted at the junction after having been planted about two years. After that they may be lifted and examined, when those that have formed roots may be operated upon as follows:—Let the Manetti root be cut off just below the junction with the scion with a pair of shears called guillotines, and the Rose (now upon its own roots) should be re-planted somewhat deeper than before. Roses thus treated may be taken up again in a year or two, and split up into three or four good fibre-rooted Rose trees. Roses on the Manetti also submit well to layering. It is not wise to plant standard Roses in town gardens, as they generally die after the first year, or at best have only a sickly appearance. Roses on the Manetti are better than those on their own roots for town growth. The Manetti stock succeeds well even on poor soil. Roses on their own roots may be grown with advantage in the country, where the soil is naturally rich and good, but where the soil is sandy or gravelly Roses on the Manetti will be found to be the best. Liquid manure-water should be applied to them twice a week, from April to the end of September.—Henry Taylor, *Fencote, Bedale.*

Self-sown Portulacas.—Few annuals are more beautiful than these, yet, with the exception of a patch or two in the mixed border, one seldom sees them. They should occupy a situation fully exposed to the sun. Here we always have one large bed of them, which never fails to obtain a large share of admiration; and this requires less attention than any bed in the garden. About the middle of April, when the soil is dry, I skim off about an inch of the surface, which I run through a sieve; then I manure and dig the bed, spreading a little of the sifted soil evenly over its surface, and the result is, by the end of May, a good regular bed of plants. This is done every year, as, besides the necessity of manuring and digging, if left to themselves they come up far too thickly, and consequently weakly. The surplus sifted soil may be used for other beds; it is always so full of seed that a small quantity of it is sufficient for a bed. If I were forming a bed for the first time, I should procure a packet of seed, and after thoroughly mixing it with some dry earth sprinkle it evenly over the surface at the time and in the manner above described. I find this to be more satisfactory than raising seedlings in a frame and transplanting them. They come into flower as early as the other bedding plants, and last the whole season. They succeed best in a light sandy loam, and require but little water.—D. Uphill, *Moreton, Dorchester.*

The Twining Hyacinth (Brodiæa californica).—Of all the pretty flowers that abound in California we know of nothing prettier than the Twining Hyacinth. The flowers are of a very fine pink or deep rose. It grows in the mountains and twines over every bush it can reach, and the flower-stem goes to the top of the bush to which it is attached, no matter if it be 5 ft. or 10 ft. in height. After it gets to the top of the bush and rests awhile to be sure it has got a good hold, it quits the ground, and goes on blooming and seeding for weeks and months, regardless of the burning sun by day or the cool mountain air by night. The leaves are long, narrow, and grass-like. The roots go very deep, and being entangled with the other roots, it is next to impossible to get them up. This plant is in flower at all times from May to September. The flower-stem breaks off near the ground, and the flowers are left swinging in the air without any connection with earth or root, supported by the bush about which it twines.—James Vick.

Staging Cut Roses.—The superb baskets of cut Roses shown by Mr. George Paul at the recent Aquarium Exhibition affords to managers of those shows an idea well worthy of attention. If it were possible to introduce a class for twelve varieties, consisting of twelve cut blooms of each, to be shown in shallow baskets set in a bank of Moss or Lycopodium, they would constitute the charm of the exhibition. Several advantages would result from this mode of staging Roses: first, the effect would be much more pleasing than it now is, and there would be an entire absence of formality; second, only the best sorts would be shown in such a class; and thirdly, such an arrangement would prove a much better guide to buyers as to what kinds to purchase and what to avoid than the numberless single blooms of diverse sorts generally shown. Managers of Rose shows have, or should have, two distinct objects in view; first, to encourage the growth of the very best varieties in their respective localities; and secondly, to secure the most effective and beautiful display. That all the finest Roses grown find their way to Rose shows there can be little doubt, but sorts of high-class quality often receive comparatively little notice when represented only by single blooms in a large collection. The invariable monotony attendant on a large show of cut Roses is constantly being deplored, and visitors, instead of being struck with the beauty of individual kinds, pass along the lines of boxes almost with indifference, simply because the exhibition is but a stereotyped repetition of what they have seen before; indeed, it is not unfair criticism to say that barrenness of originality in arrangement is nowhere more evident than in Rose shows. The interest taken in Mr. Wm. Paul's Rose parterre, shown at the Regent's Park exhibition last summer, indicated how readily frequenters of flower shows appreciate any breaking through stereotyped methods of arrangement; and, although it is by no means advisable that the exhibition tables of Rose shows should be converted into floral parterres, in which the flowers should be overlooked in admiration of the design, still it is both obvious and desirable that some more pleasing form of staging should be introduced, by which visitors would be more effectually attracted, and the merits of fine Roses more fully displayed. Classes of the kind just indicated could easily be managed by large growers; and for smaller growers classes for six kinds or for twelve kinds, six flowers each might well be introduced. These classes should, however, in the first instance, be adopted as experimental and supplementary, rather than for the purpose of at once effecting a complete revolution. Exhibitors might, perchance, object to them as involving too much trouble; but good prizes would be certain to induce competitors, and if the public appreciated the change, the experiment would doubtless lead to permanent improvement.—A. D.

Mossy Saxifrages as "Carpet" Plants.—I am glad that Mr. Perry (see p. 352) has directed attention to the use of Mossy Saxifrages for this purpose. Early last year we planted Saxifraga nervosa as a carpet over a bed in which had been planted Scilla amœna and Scilla italica, and several of the North American Lilies. The effect was not only pretty, but the ground was kept moist, which suited both Scillas and Lilies. In another bed we had a variety of Mossy Saxifrages covering the ground; in them were planted Snowdrops, Snowflakes, and Scilla sibirica, while a number of Primroses seeded themselves into them. This has been a popular bed with all visitors. Since then we have planted large beds of Lilies, with Saxifraga atropurpurea, S. pulchella, cæspitosa and densa, and on the rockwork tufts of Leucojum æstivum and vernum, with S. nervosa; this makes a pretty green carpet. We have surfaced Lily pots in the orchard house with S. palmata, now in bloom, and Lilies in a large bed with S. nervosa, and believe the Lilies will be the better for it.—G. F. Wilson, *Heatherbank, Weybridge Heath.*

Alpine Auriculas.—Few spring flowers are more effective than these; they bloom in April and May, and are easily managed. Procure a packet of seed, raise it carefully, and some fine flowers will be the result. A few shallow pans or flower pots half full of crocks should be filled with fine soil, consisting chiefly of loam from rotted turf, leaf-mould, and peat, or a fine sprinkling of silver sand. Press the soil firmly in the pots and soak it well with boiling water, in order to kill any small insects or their eggs that may exist in it. When cold sprinkle the seed on the surface, and cover it very slightly with fine mould. Lay a cover of Moss on the top of each pot to retain the moisture, and place them in a cold frame. Lift up the Moss about once a week, and if the soil appears to be getting dry, which it never ought to be, pour some water on the Moss, an operation which will not disturb the seeds. In about a month the young seedlings will begin to appear. When large enough to handle, pot them off singly into very small pots, using the fine compost already mentioned; they will soon begin to grow in earnest and require a larger pot. They must not be exposed to a scorching sun; the pots should now be plunged in ashes in a situation having a north aspect. Some of the strongest seedlings will show bloom in the autumn, and as soon as the trusses appear, they should be nipped clean out. When a bed has been prepared in October, by digging into it some good rotten hot-bed manure, the plants may be turned out of their pots into it, about 8 in. apart. When the seedlings show their spring bloom, mark those that are good as to colour and quality. Propagate the best by means of off-sets, and get rid of the others by giving them to some neighbouring cottager, who will be glad of them. Alpine Auriculas are very hardy, and as the foliage is not mealy like that of the show varieties, they form desirable plants for window culture, and require only to be secured from damp and drought, to bloom freely and finely with but very little trouble.—Henry Taylor.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Spring Phlox (Phlox verna).—You name this among desirable spring flowers. It is a most beautiful plant where it does well; but it is rather capricious. I should like, however, to know the authority for the name. I believe Phlox verna to be only a nurseryman's name; its proper botanical name is Phlox reptans.—H. N. Ellacombe, *Bitton Vicarage.*

Destruction of Primrose Blossoms.—Some (to us) unknown enemy entirely destroys the beauty of all plants of the Primrose kind in our shrubbery borders. The ground round each plant is, every morning, strewed with the blossoms and buds which have been cropped off during the night. The leaves appear quite uninjured. Can any of your correspondents throw any light on the matter?—Essex.

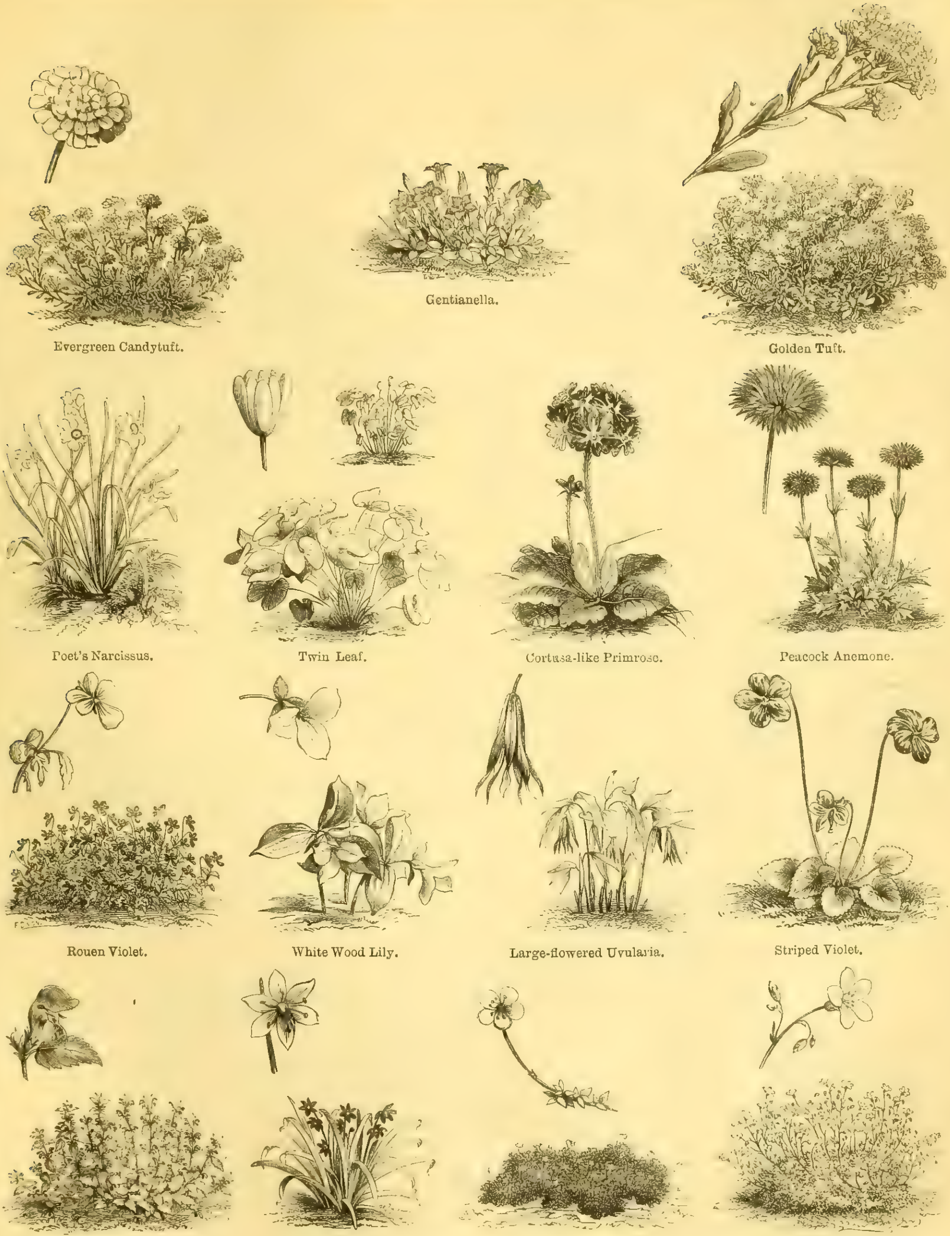
The Blue Bitter Vetch (Orobus cyaneus).—This is a compact plant, resembling the well-known O. vernus, but dwarfer, and with broader leaves; it produces short racemes of large azure-blue flowers, which are raised well above the foliage, and hence more conspicuous than those of the well-known species just alluded to. It is rarely met with in cultivation, nor can I find it in any of our lists; but it is perfectly distinct, and worthy of being more generally known and cultivated than it is.—J. C. Niven, *Botanic Gardens, Hull.*

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Happily for the hardy flowers, as we call our Alpine and herbaceous friends, they are not so rash as the Plums and Pears in the orchards; otherwise, we might have now to record that the ground was strewn with their ruins after the Arctic weather of last week, which did so much harm to the young leaves and flowers in the orchards round London. Most of the flowers are yet waiting for more genial days, though there are some which do not cease to grow, and show their flowers rapidly, as, for example, the beautiful white Wood Lily (Trillium grandiflorum), which is opening its delicate-looking blossoms round London. In London gardens or nurseries, however, it is never seen in the robust state to which it attains in some country gardens, where it is allowed to become established in some shady rich border. Then it is indeed lovely. The finest plants of it we have seen either in Europe or America were at Biddulph Grange, and they were superbly grown tufts about 2 ft. high. Another singular-looking and pretty native of the woods of North America is the twin-leaf (Jeffersonia diphylla), with delicate white blossoms reminding one of those of the Bloodroot. Our bare borders and beds are not the places for such plants as these, where they are exposed to relentless easterly winds and the glare of the spring sun. They enjoy the sun most when he shines on them through a light green curtain of leaves overhead, and they do not much fear easterly breezes if accompanied by Mosses or Grass leaves, or Fern fronds, or the many plants that compose the turf and undergrowth of woody places. At Kew some of the beautiful Androsaces are in flower—haunters of the high rocks—never likely to be seen in perfection except in the hands of those who understand Alpine flowers well, or where the conditions are very favourable. The three-leaved Coptis (C. trifoliata), the drooping and quaintly elegant Uvularia grandiflora, the faint blue Daisy (Bellis rotundifolia cœrulescens), the Rouen Violet (Viola Rothomagensis), the American Striped Violet (V. cuculata), the Cortusa-like Primrose (P. cortusoides), are in flower at Kew, where, although the soil is light and warm, the herbaceous department is yet very bare of bloom. That charming little stone-clothing Sandwort (Arenaria balearica) is opening its small white stars, accompanied by the Snowy-white Hutchinsia (H. alpina), and the little white and rich yellow Whitlow Grasses (Draba), of which the creeping Whitlow Grass (D. repens) is a good yellow kind, worthy of a place in a choice collection of Alpine flowers. With these in flower are some of the most ornamental of the Alpine Saxifrages, S. Rocheliana, S. aretioides, and others. The hardy and most precious evergreen Candytufts (Iberis) are, on the warmer soils, turning from dull green to snow, and the well-known Golden Tuft (Alyssum saxatile and varieties) is, as yet, only sprinkled with gold. The Peacock Windflower (Anemone pavonina) is in bloom, as is the odd-looking half-ornamental Allium parodoxum, the Gentianella (Gentiana acaulis), the White Potentilla (P. alba), and the Scurvy Grass (Cochlearia officinalis). The Caucasian Comfrey (Symphytum caucasicum) is unfolding very slowly its blue bells, the spotted Dead Nettle (Lamium maculatum), the earlier forms of the Poet's Narcissus (N. poeticus), and the neat little Milkwort (Polygala Chamæbuxus), begin to enliven the scene, and the Italian Scilla, mentioned last week, is now joined by the Star-flowered Scilla, S. amœna.

HARDY FLOWERS AND ENGLISH NAMES.

One of the greatest boons to readers of The Garden has been conferred by the newly-adopted plan of illustrating "Hardy Flowers of the Week," and an additional benefit is derived by ninety-nine persons out of a hundred through having plain English names appended to the plants. There are thousands of individuals devoted to flowers who cannot remember names which do not convey a single idea to their minds, and many more hardy flowers would be cultivated if an intelligible name were associated with the recommendation to plant or sow them; for instance, how many would remember to ask for the Snake's Head who would entirely lose all recollection of the Fritillaria meleagris; the Crimean Iris would never be forgotten, but the I. pumila would have little chance of remembrance. The White Buttercup presents a picture to the mind's eye, but the Ranunculus amplexicaulis falls on the ear without the slightest effect. I am



Evergreen Candytuft. Gentianella. Golden Tuft.

Poet's Narcissus. Twin Leaf. Cortusa-like Primrose. Peacock Anemone.

Rouen Violet. White Wood Lily. Large-flowered Uvularia. Striped Violet.

Spotted Dead Nettle. Star-flowered Scilla. Balearic Sandwort. Mossy Saxifrage.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

most anxious to know where a supply can be obtained at a moderate cost of bulbs and other hardy outdoor flowers and plants, and also of hardy flowering climbers for trees or walls, which were once common in gardens, and are now almost extinct, but are being happily revived. The general cost of the commonest flowers is so great that many who have extensive grounds and small incomes, but every desire to fill their borders with flowers, know not how to begin for want of material; and, in many cases, seeds are so long before they come to sufficient maturity to flower with any effect, such as Polyanthuses and all the Primrose family, that great discouragement is occasioned, and where there are not hands enough to bestow great labour on weeding and protecting, &c., the seedlings are lost almost as soon as they appear; whereas, if established plants could be procured, they would be preserved and left to seed themselves. It is to be hoped that many nursery grounds may now be, to some extent, devoted to the culture of such flowers, to afford a supply for the million, as well as for the preservation and extensive propagation of the old, well-known, hardy Bush Roses (single and double); among the former of these some of the old, beautiful crimson, small single-flowered Roses are almost extinct, and the old-fashioned Honeysuckles—so fragrant and beautiful in the month of May, in summer, and in autumn—are seldom seen and almost unknown in nurseries. As for the "wild garden," the writer has within reach, in their season, wild Orchises (lilac and purple), Cowslips, Lady's Smocks, Daisies, Blue Veronica, Ground Ivy, Wood Anemone, and Buttercups, viz., the little yellow variety with a horseshoe leaf that grows on damp ground and on moist hedge-banks, also wild Pimpernels, and the commonly called Buttercup, which flowers amongst grass before the hay harvest. These wild flowers, when once out of bloom, are scarcely to be seen until the spring returns again. Can any of your readers say if there is any practicable method of taking them up when in bloom without killing them, for the purpose of cultivation, in large quantities, as garden plants; or when should I transplant them?—Ll. C.

THE FRUIT GARDEN.

REPORT ON RED AND WHITE CURRANTS FRUITED AT CHISWICK IN 1875.

There is, perhaps, no class of fruits in ordinary cultivation in this country in which so much confusion exists in regard to their nomenclature or their distinctive merits as in that of Currants. Names exist in plentiful variety, but the fruits of all the kinds are very similar, so that it has been impossible to distinguish them. The varieties may vary to some extent as to the size of the bunches, berries, their colour, cropping qualities, &c.; but as these are considerably affected by cultivation, situation, &c., their comparative and distinctive merits can only be ascertained when all the varieties are grown together under the same conditions, as in the present instance. The collection, consisting of forty-five reputed distinct varieties, was got together from various quarters, and represents most of the names to be met with in English nurseries and a few of the French. Altogether there exist about sixty distinct names as applied to the Red Currants, and about fifteen to the White, so that the remainder have to be collected and described. The classification is based chiefly on the appearance of the plants, their foliage, habit of growth, &c. This is very decided, distinct, and easily to be recognised. The typical names adopted may not in every instance be correct, but the varieties given as synonyms are all identical the one with the other as they have been received by the Society. There is no means of distinguishing any of the varieties by their fruit alone.

Reds.

1. **Red Dutch** (synonyms—Fertile, Fertile d'Angleterre, Fertile de Palluan, Fertile de Bertin, La Hative, Hative de Bertin, Bertin No. 9, Belle de St. Gilles, Chenonceaux, Grosse Rouge de Boulogne, Queen Victoria, Red Grape).—This is one of the best varieties in cultivation. A most abundant bearer, and ripening early. The bunches are long, and the berries large, full, and juicy, of a bright red colour. The plant is of a dwarf and somewhat slender habit of growth, never attaining a large size. The leaves broad and flat, deep green, having a sort of metallic glaucous hue, which renders it in appearance quite distinct. The synonyms here given are all referable to this one variety, and which is the one generally grown and known in this country as the Red Dutch.

2. **Knight's Large Red** (synonym—Knight's Sweet Red, Goliath, Fielder's Red, Palmer's Late Red, Pitmaston Red, Pitmaston Prolific, Large Sweet Red, Bertin No. 1, Dancer's Selected).—This variety is not quite so early as the Red Dutch. It is a most abundant bearer. The bunches are long and produced in immense clusters; berries of medium size, of a bright red colour. The plant is of strong and vigorous growth, the shoots growing mostly erect. Leaves pale green, rather small, somewhat deeply cut and crumpled in appearance. This variety is in most general cultivation in the market gardens around London, having probably been selected for its strong, vigorous constitution. Messrs. Krelage, of Haarlem, sent fruiting branches of this variety as the true Red Dutch Currant as grown in Holland.

3. **Old Red** (synonym—Rouge Commune).—This greatly resembles the preceding. The plant is of most robust growth, but a poor cropper and with small berries. It is most probably the original stock from which Knight's Large Red, the present common variety, has been selected.

4. **Red Cherry** (synonym—La Versaillaise).—The berries of this variety are very large and handsome, almost like small Cherries; but they are produced very sparingly, the bunches frequently consisting of only one berry, and from twenty to thirty berries on a plant. The plant is of a gross spreading habit of growth; the shoots pale, very gross; leaves very large, broad, deep green. It is unsuited for cultivation in the open ground, as the shoots, from their gross nature, break off so easily, and so no plant is formed. The buds do not break freely after pruning. Grown against a wall it is more satisfactory.

5. **Houghton Seedling** (synonyms—Houghton Castle, Orangefield).—This is a late variety. The berries of medium size, deep red, and rather acid; bunches long, produced in very thick clusters. A most abundant cropper. The plant is of a very robust, close-growing, sturdy, stubby habit, very rarely producing long shoots. The leaves are small, deep dark green, somewhat deeply cut and crumpled in appearance. Very distinct. This variety, from its close compact habit of growth and sturdy constitution, is very suitable for growing in exposed situations and for training as an espalier or pyramid.

6. **Gondouin** (synonyms—Raby Castle, May's Victoria, Imperiale Rouge d'Holland à grappes longues).—This is a remarkably strong-growing late variety. The bunches are very long. Berries large or above medium, of a bright red colour, with a sharp acidity. As a bearer it is only medium. The plant is of a most robust growth, soon forming large bushes. Shoots strong reddish. Leaves large, dark green, with reddish veinings, flat, deeply cut, very showy, and very distinct. The flowers have also a reddish tinge. This is one of the latest Currants to ripen and hang well on the plants afterwards. The plant, from its strong vigorous growth, is very suitable for growing as standards or large bushes.

7. **Verriers Rouge.**—This appears to be a compact dwarf-growing form of the Gondouin.

8. **Mallow-leaved** (synonym—New Sweet Red).—This is a strong-growing late variety. Bunches long; berries small, of a pale red colour. Late in ripening and a somewhat poor cropper. The plant is of very distinct appearance, strong, tall-growing, with pale shoots. Leaves large, flat, soft, downy like a Mallow, of a pale green colour, sometimes like the Black Currant.

9. **Laced-leaved** (synonyms—Large Sweet Red, Large Red' d'Hollande à feuille bordée).—A fine, compact-growing, bushy variety. Bunches of a medium size; berries medium, of a pale red colour. A most abundant bearer. Shoots dark, spreading. Leaves dark green with a glaucous hue, and the greater portion, more especially those in the shade, having a narrow silver lacing or border, giving the plants a slight variegated appearance. A very excellent good-habited variety.

10. **Cut-leaved** (synonyms—Feuille laciniée, Eyatt Nova).—Plant of somewhat slender spreading growth. Bunches of medium size; berries small, of a pale red. A very poor cropper. Leaves small, deeply cut, or laciniated and pointed, rendering it very distinct in appearance.

11. **Variegated** (synonym—Feuille panachée).—This is a variegated-leaved form of the common Red. A poor cropper. The leaves are prettily variegated on their appearance in spring, but soon become dull and dingy.

12. **Striped-fruited.**—This, in appearance, resembles the common Red. Berries small, pale in colour, with one or two darker stripes, rather pretty. A very poor cropper. The Gloire des Sablons is stated to be a white variety, prettily striped with red. At Chiswick it proved the same as Gondouin.

13. **Champagne** (synonym—Couleur de Chair).—This is remarkable on account of the pale flesh colour of the berries, and their sweet flavour being exactly similar to the white varieties. Bunches short; berries small. The plant is of dwarf bushy habit and robust. Leaves broad, flat, having the appearance of the Red Dutch. It is an abundant bearer. A desirable variety.

Whites.

14. **Common White** (synonym—Blanche Commune).—Plant of dwarf bushy habit. Leaves small, deeply cut and crumpled in their appearance. Bunches small; berries small.

15. **Wilmot's Large White** (synonym—Blanche d'Angleterre).—Plant of free, somewhat erect growth. Leaves large, flat. Bunch of medium size. Berries, large white. A good cropper.

16. **White Dutch** (synonym—Blanche d'Hollande).—Plant, leaves, &c., of exactly the same appearance as the Red Dutch—dwarf, compact, bushy. Bunches, large; berries, large or very large, of a yellowish-white colour, very fine, juicy, and sweet. A great cropper.

A. F. Barron.

A White Black Currant.—I use this name for want of a better. "White Black Currant" is not a more paradoxical expression than "white blackbird," a title I once saw attached to a white stuffed specimen of the Turdus merula in a museum. I fancy my Currant must be the same as the one which your correspondent "P." saw in Norway. I have only seen it once, and only one plant of it, and it grew in the flower garden at Drumlanrig Castle, when I was an apprentice there in Mr. McIntosh's time. I have occasion to remember the bush particularly. At the time I was confined to the flower garden department, and having no share in the fruit gathering, the discovery of a bush laden with large green or white fruit in one of the shrubbery clumps while another youth and I were engaged in pulling the seed-pods off the Rhododendrons was to us a notable event. The bush and its fruit were in every way like a Black Currant, except that the fruit was white and transparent. The shoots also were paler in the bark than those of the Black kind. Perhaps the bush is still at Drumlanrig, and Mr. Thomson may be able to give some information about it. It grew on, I think, the topmost clump of shrubs, or thereabouts, in what was called the "Gallow Flat," near the broad walk which runs through the flower-garden from the gate going into the parks on the east.—J. S. W.

A Durable Strawberry.—It is an axiom among many Strawberry-growers that to have an annual crop of fruit a fresh plantation must either be made every year, or every two years at the furthest. To endeavour to make an old bed productive by applying stimulants, and by careful and thorough cultivation of the soil, has heretofore been deemed a waste of time and money; and yet this system is not thrown away in the case of the Triomphe de Gand, when grown on heavy soils. It seems to be an exception to the general rule, for if the plants be kept free from runners, they will bear excellent crops for several successive years; at least, such has been the experience of more growers than one, says the "New York Tribune," who still adhere to this estimable variety.

Pears on Apple Stocks.—M. Carrière, who has made some experiments on this subject in the Jardin des Plantes, finds some Pears to succeed tolerably well when cleft-grafted on Apple stocks, but by no means so well as when worked on the Quince. In looking over the back volumes of The Garden a day or two ago, I found (in Vol. III., p. 289) the following note on this subject:—"Pears grafted or budded on bearing Apple trees is the quickest, surest, and cheapest way in which I ever grew Pears. I never picked better Pears," says the writer (who dates from Kansas), "than I have picked from old Apple trees, topped and budded or grafted with Pears, and they have always borne early and profusely. In large Apple orchards may sometimes be found worthless scraggy trees, and on such I have practised the plan of changing them to Pears, from which I never failed in two years to get a good crop. In some trees the Pear would die out in five or six years, while others were healthy to my knowledge for ten years, and were still doing well when I last saw them in 1865." The effect of Apple stocks is probably restrictive, therefore they would promote fruitfulness at the expense of longevity. It may be as well to direct attention to the fact that it is quite possible for any but the most practised and careful observer to confound the Quince stock with the Apple, inasmuch as the leaves and shoots of the Quince resemble those of some Apples very closely when young; but in the above case, and also in that cited by your correspondent (see p. 351) there does not seem to be much [doubt but that true Apple stocks were employed.—B.

Some Varieties of Almonds.—The Royal Almond, or Princess, is also known as the Paper-shell, because of its covering being so thin that it can be easily broken. The kernel is also peculiar for its richness and flavour. It is alleged that this variety can be produced nowhere else than in the south of France, where the warm, dry soil and balmy climate are especially adapted to its cultivation. Next in value and importance comes the Languedoc Almond, which is also a soft-shelled kind, though not nearly so light as the Princess, the shell being thicker but more porous. This Almond is grown principally in the province from which it takes its name. A large proportion of the Languedoc Almonds are used up in home consumption while still green, and they are said to be delicious when eaten while fresh and milky. The Tarragona Almonds were formerly grown in a small tract of country in Spain in the neighbourhood of the town which gives them their name, but at the present time many Almonds exported from France are classed as and sold under the name of Tarragona. The Provence Almond, which comes next, combines to a degree the qualities of both the Languedoc and Tarragona, but is hardly up to the standard of either. Lastly comes the Ivica Almond, grown on the islands in the Mediterranean Sea, south-east of Spain. There are five islands in the group—Majorca, Minorca, and Ivica being the principal ones—and they all produce Almonds.

Span-roofed Houses v. Garden Walls.—What can be more beautiful than a span-roofed house at this season full of bloom, varying in colour from the white-blossomed Cherry to the lovely tints of our Peaches and Nectarines? What would I not give for a garden enclosed with span-roofed houses instead of brick walls! Under such circumstances Peaches might be had from May to November, and the glorious old Coe's Golden Drop Plums until Christmas. As regards flowers, why, Maréchal Niel Roses would become almost perpetual, and the lovely Lapagerias, both red and white, if planted in the borders, would be laden with flowers, which, for bouquets, are quite unmatchable. A skilful cultivator would soon find princely occupants for such structures. Dessert dishes would be easily filled with delicious fruit, and dressing the dinner table with choice flowers would be an operation readily performed with houses of this description well-built and properly warmed.—R. Gilbert, *Burghley*.

Drying Figs.—The process of drying is very simple. The fruit is first dipped in scalding hot lye, made from the ashes of the Fig tree, and then dried in the sun or in ovens made for the purpose. No sugar is used to preserve them, the pulp containing 62 per cent. of sugar. The skin retains so much of the lye that when handled it scours the hands like lixivial salts, and it is this process which gives them their medicinal value as a gentle and mild laxative, and also as a drawing and healing plaster. They are pressed into drums and boxes for sale, and in many of the islands of the Levant form an important article of food. Great quantities of the brown Turkey Fig are imported into England.

Spur System of Pruning Vines.—A gentleman sought advice from us (J. Douglas, in "Journal of Horticulture") the other day about his Vines. He had a most excellent position in which to grow them, and for several years the Vines have had plenty of leaves but no fruit. The reason of this was not far to seek: the pruning had been done on the short-spur system for years until the spurs were only able to produce weakly growths which never showed fruit, nor would they ever do so. Royal Muscadine is the best out-of-doors Grape, and this was the variety grown; but to grow fruit as well as leaves a certain number of young canes must be trained up from the base of the Vines annually. As the Vines are now starting into growth, they must be disbudded, and a little care be exercised in selecting the most suitable growths. None of the rods ought to be older than three or four years.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Ribston Pippins in Constantinople.—As a proof that it only needs care and proper selection to grow as good fruit in Constantinople as in England or France, I may state that I have eaten delicious Ribston Pippins, grown in the garden belonging to Sergeant Lyne, R.E., the guardian of the British Cemetery at Scutari. One is apt to suppose from seeing a number of worthless Apples and Pears in Southern Europe and the East generally that the bad fruit is due to the climate, whereas it is really owing to the want of good kinds.—B. B.

Hacon's Incomparable Pear.—This is a large round late Pear of the Easter Beurré type, and one which, on some soils, is said not to bear well or become melting; on the strong soil, however, of the kitchen garden here it is one of our surest bearing Pears; it has been in use for the last two months, and there are still a quantity of smaller specimens left to become melting. It is richer in flavour and more juicy than the Easter Beurré, and like that kind is a little gritty at the core, especially large specimens of it. It must, I think, be a seedling from Easter Beurré, its shape, thick skin, and texture of the flesh indicating that parentage.—William Tillery, *Welbeck*.

Paul's Improved Crab.—This was illustrated in the January number of the "Florist and Pomologist." It is highly coloured and a little early, and is therefore regarded as a hybrid between the common Siberian and Red Astrachan, but the fruit growers of Western America have, according to the editor of the "Gardeners' Monthly," obtained numerous seedling Crabs of this character, as simple seedlings, without any idea of hybridisation.

Hardy Apples.—Mr. Peffer furnished a list, at a late meeting of the Wisconsin Horticultural Society, of those Apples that would pass safely through 39° below zero, namely, Tetofsky, Duchess of Oldenburgh, Alexander, Fall Orange, Ben Davis, St. Lawrence, Red Astrachan, Walbridge, Haas, Plumb's Cider, Pewaukee, Fameuse, and Tallman Sweet.

PLATE XVII.

THE COLUMBINES.

(WITH COLOURED FIGURE OF THE ALPINE COLUMBINE.)

The Columbines rank amongst the next successional flowers to those that belong purely to the spring months—their flowering period extending throughout May and June. Among them may be found great variety in the way of colour—white, rose, buff, blue, and purple, and also stripes and intermediate shades even in the same flower. Then amongst our American introductions we have yellow, orange, and scarlet. Besides colour, too, there is also considerable variation in the shape of the flowers. In some the petals are reduplicated, and in the very double forms of our common garden Columbine, on removing one of the five petals, which are usually distinguished by their brighter colour and almost invariably by the presence of a receding spur-like appendage, it will be found that a series of from six to a dozen, or even more petals, are beautifully arranged one inside the other. Setting aside any economic value the spur-like processes may have, they not only form a pleasing addition to the flower, but they yield well-marked and constant specific distinctions, and in fact have given the origin to the name, both in its botanical and English form—Aquilegia, from *aquila*, an eagle, in allusion to the group of spurs incurved and almost hooked at the points, like the talons of the bird in question; and Columbine, from the similarity that the termination of each individual spur has to the short slightly-hooked bill of the dove, *columba*; or as in the case of the Alpine species here figured, where the spurs are short and broad, they collectively remind one of a group of little doves holding a conference. Besides the specific characters just alluded to derivable from these appendages, the whole genus naturally divides itself into two well-marked groups, according as the spurs are incurved at the point or straight. To the former section nearly all our Old World species belong; and to the latter, the more recently discovered denizens of the New World. A glance at our plate will indicate at once that the Alpine Columbine belongs to the former section, although, by the way, Willdenow, in his brief description of A. alpina, states that the spurs are straight. It is, however, certain that in none of the plants that I have ever cultivated under the name—and some of them were received direct from their Swiss habitats—was this character observable; in fact, the chief feature by which it may readily be distinguished from A. vulgaris consists in the spurs being shorter and thicker than in that species, the petals broader and more expanded, and the whole plant of dwarfer stature, rarely exceeding from 12 in. to 15 in. high. The petals are frequently altogether blue, or merely margined with white; while, as here represented, they are wholly white, with the exception of the spur. The leaves of this, and, indeed, of all the species, are what is called twice or thrice ternate, of a glaucous or greyish-green colour, forming a handsome tuft of foliage, whence arises an irregularly-branching foliaceous cyme, the cauline leaves becoming simpler and less divided as they approach the true bract-like character. The leaflets in our Alpine form are more sharply notched, and the flower-stems are less floriferous than in the common one. That it is a desirable plant for cultivation there can be no doubt; but it is not everywhere that it grows with anything like vigour, and, further, it is rarely met with in our gardens or rockeries. Home-saved seeds are never to be depended upon as they become crossed with our common Columbine, and in a second generation lose almost all their Alpine peculiarities. No doubt seeds of it collected in the Alps would retain more perfectly their special specific characters. The following selection represents such species as I would recommend for general cultivation:—

Common Garden Columbine (Aquilegia vulgaris).—This is a familiar occupant of every cottage gardens in which it grows, with a vigour, and increases itself by means of seed with a persistency and a power of variation that is quite surprising. Whether its naturalization in this country was cotemporaneous with that of the ancient Britons is perhaps doubtful, but, be that as it may, it has become thoroughly at home, and no one who has once seen it wild will readily forget the combination of grace and beauty which it presents. In order to stimulate those who possess extensive wooded estates to its cultivation or establishment along the margins of drives, where shelter is afforded, I would state, that at Broughton Woods, in North Lincolnshire, this Columbine raises its stately erect stems to a height of 3 ft.; and in the month of May, when the Lily of the Valley, which grows naturally by acres and acres, associates with its beauty the further property of delicious perfume, the charm of a drive or walk, especially after a gentle shower of rain, surrounded by such associations, is greater than words can convey. There are thousands of similar situations in domains throughout the country where the seed of the one might be scattered and where the roots of the other might be planted; the rest being left to Nature. Under these conditions the seed-vessels or follicles are not devoid of beauty; their position when in bloom is pendent, but as they reach maturity they become erect, and, when fully ripe and touched by the passer-by, or shaken by the summer's breeze, ring out as a tiny chime of fairy bells. Let me note, *en passant*, that where Columbines are cultivated together in a single bed, as is generally the case in botanical collections, a couple of years will find amongst them a strange specific unity, and the pervading type will be unmistakably our wild Columbine.

Pyrenean Columbine (A. pyrenaica) ought correctly to have followed our Alpine Columbine, to which it bears a very close relation. The spurs are longer and more slender, the petals smaller and less expanding, the flower-stem dwarfer, less branched, rarely carrying more than three blossoms, the divisional lobes of the leaves are smaller and rounder, the colour more glaucous, and the surface slightly pubescent; it is in cultivation quite as shy as its Alpine brother, and, therefore, will come under my group for future cultural remarks.

Green Columbine (A. viridiflora).—This has flowers in which the petals as well as the sepals are of a greenish colour, with here and there blotches of purple—its colour, therefore, can be no recommendation; however, the spurs are reduced to short gibbous processes, and my chief reason for introducing it here is to chronicle the variety of it known sometimes by the specific title of A. atropurpurea. In it we have a plant of equal development with our common Columbine—the short spurs of the petals indicate its true specific type. The sepals are green, but the petals a deep rich chocolate. The plant is a vigorous grower, a native of Siberia, and is synonymous with Fischer's A. dahurica. It is now many years since I had it in cultivation, and it deserves to take its place amongst the front ranks again.

Meadow-Rue Columbine (A. thalictrifolia).—This is a dwarf-growing plant, with single-flowered stem, leaves covered with short glandular hairs, and spurs absent altogether; nor are they represented by the gibbous appendages of the last, this fact giving it a botanical character which I think will render a record of its existence a matter of interest to some of your readers.

Siberian Columbine (A. glandulosa, synonyms jucunda and concolor) is by a long way the most charming of all the species hitherto noticed, and may be said to occupy an intermediate position between the two sections. The spurs are of moderate length, slightly incurved, but not hooked, the sepals large and wide-spreading, of a deep purplish-blue, the petals are large, wide, expanded, and margined, with a broad band of white; when growing well, which it rarely does in the south of England, or indeed south of the Tweed, it produces a number of these large blossoms, raised well above a mass of light grey finely cut foliage, and, under those circumstances, it is a plant that has few equals; it is a native of Siberia, where it appears to be very widely distributed, chiefly occurring along the margins of the mountain streams. It has one singular peculiarity, that whereas the seeds of all the other Columbines have a bright perisperm, those of this species are unburnished, arising from little corrugated markings with which the microscope shows them to be covered.

Slender-spurred Columbine (A. leptoceras).—This according to priority, should yield to the name given to it by its discoverer, Mr. James, viz., A. cœrulea; but seeing how characteristic is Nuttall's name of the special peculiarity of the plant, and as the original seeds sent by Burke from the Rocky Mountains did not yield a single blue form, I think we shall not be far wrong in recognising Thompson's plant as a blue variety of A. leptoceras. When I say that the mouth of the wide-expanded corolla is nearly 3 in. in diameter, and the graceful outward-curving slender spurs are above 2 in. long, some idea may be formed of the beauty of this plant; the sepals, petals, and spurs are of an ochroleucous colour—that is, a mixture of yellow and white, with a decided predominance of the white. Burke described it in a letter as the plant which excited his admiration, most of all those that he obtained in his excursion on the Rocky Mountains, which, by the way, yielded many gems; and truly, were its size of bloom and elegance supplemented by a little more vigour of constitution, it would have few rivals in either the herbaceous border or the rockery; A. macrantha, of Hooker and Arnott, is a synonym.

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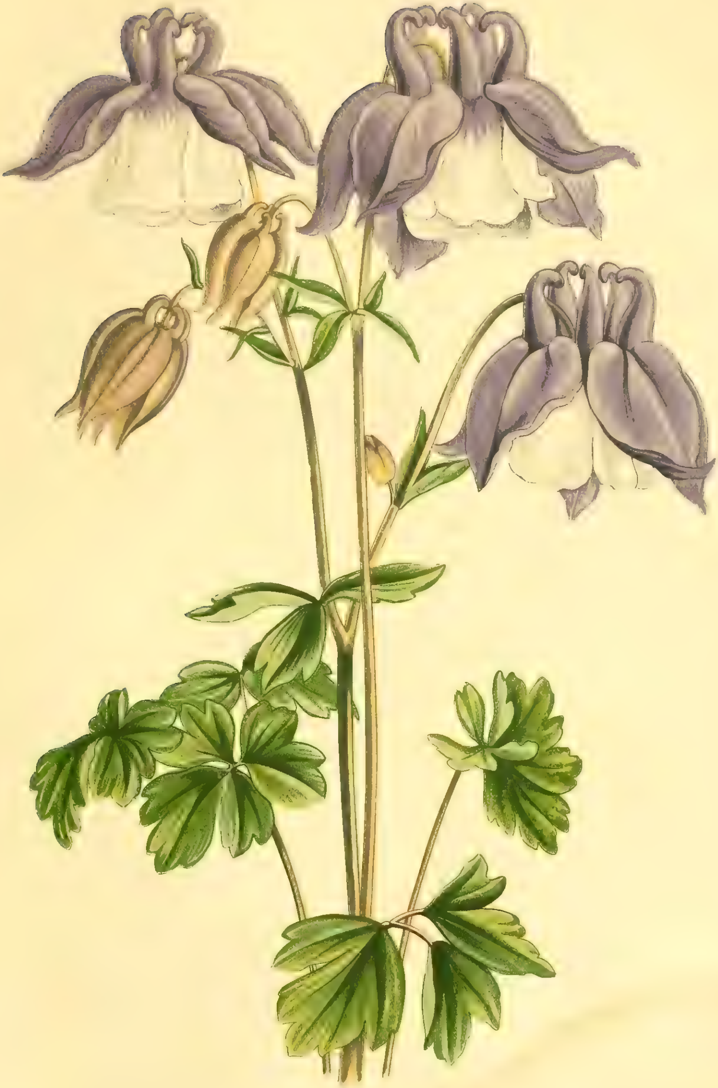


[illegible] ALPINE COLUMBINE. (AQUILEGIA ALPINA.)

Blue Rocky Mountain Columbine (A. leptoceas cœrulea).—This has flowers suffused with a delicate blue tint. My own experience is that they are also smaller in size than the type; but, like several we have already alluded to, it is rarely met with in vigorous growth, under which conditions it might possibly require some modification in this respect.

Canadian Columbine (A. canadensis).—This was once the only New World Columbine, having been introduced from Virginia by the younger Tradescant. It may be taken as the type of the scarlet-orange and yellow group. The flowers are of much smaller size than any of those just described; this, however, is amply compensated for by the brilliancy of the scarlet colour of the sepals and the erect somewhat capitate spurs, and the bright yellow of the petals. The true A. canadensis is a slender grower, scarcely exceeding 1 ft. in height, with sharply-notched irregularly-ternate leaves. As seen in cultivation it often presents a decided hybridity, under the influence of which an increased vigour of growth and a decreased brilliancy of colour are manifest.

Skinner's Columbine (A. Skinneri).—This, though evidently allied to the previous species, is abundantly distinct. The flowers are supported on long slender pedicels, the sepals being greenish-coloured and lanceolate; the petals are small and yellow; the spurs are nearly 2 in. long, of a bright orange-red, and attenuated into a slightly-incurved club-shaped extremity; the leaves are very glaucous, their divisions being sharply and irregularly incised; the flower-stems acquire a height of 18 in. to 2 ft. Though coming from so far south as Guatemala, owing to the fact that it is met with in the higher mountain districts, it is nearly, if not altogether, hardy, and should be more frequently cultivated than it is. Here, again, hybridity steps in and too frequently mars its beauty.

Californian Columbine (A. californica or A. truncata).—This is the strongest grower of all the American species. Its radical leaves are somewhat scanty and supported on long petioles; the divisional lobes are well separated. The tendency of the plant is to produce one bold woody stem, which, under favourable conditions, will rise to the height of 3 ft.; the sepals are orange-coloured and blunt-pointed, being closely adpressed to the petals, which are also blunt; they give one the idea that they had been trimmed round with a pair of scissors; hence the appropriateness of the specific term truncata. The spurs are long, bright orange, more attenuated than in Skinner's Columbine, but to appreciate the full beauty of the flower it must be turned up from its naturally pendent position; then the beautiful shell-like arrangement of the petals becomes at once visible, the bright yellow marginal line gradually shading off into deep orange. The seeds of this species should be carefully looked after, as having once blossomed the old plant is liable to perish; and, further, I have never been disappointed with the seedlings diverging from their parent type in character.

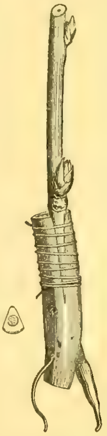
Golden Columbine (A. chrysantha).—This is a very fine strong-growing plant, sending up from amidst a mass of delicate glaucous leaves a number of stems to a height of from 2 ft. to 3 ft. As the specific name indicates, the flowers are of a golden or rather bright canary yellow, which remarks as regards colour equally apply to sepals, petals, and spurs alike. It is, I believe, a native of the Rocky Mountains and California, and has but one fault, that it develops its tender leaves very early in the season, and is liable to have much of its beauty damaged by our April frosts and snows.

Himalayan Columbine (A. kanaoriensis).—This is one of the best; it was discovered by Thompson at Kanaora, in the Western Himalayas, and more recently at Thibet, where it grows at an altitude of from 12,000 ft. to 15,000 ft. It is a slender plant about 15 in. high; leaves few in number, beautifully glaucous, and covered with short glandular hairs; the flowers are small, the sepals white, expanding horizontally; the petals also white at the margin beautifully reflexed, the blue colour becoming more pronounced in the spurs, which are perfectly erect and rigid, and culminating in an azure club-shaped process at each terminal point. This, for delicacy and beauty, takes the same position amongst Columbines that P. capitata does amongst Primulas.

Our figure of A. alpina is from "Alpine Plants," published by Messrs. Bell & Daldy.

Cultural Remarks.

To those who are familiar with the vigour of our common garden Columbine it must appear strange that there should be any difficulty in the cultivation of the various species that I have enumerated in the above descriptive article, and yet I know of no plants that are so capricious; take, for instance, the charming A. glandulosa, grown like a weed, at Mr. Grigor's nursery, from whom years ago I had a hamper of plants in full blossom—a sight worth going miles to see. This was succeeded by a hamper in the early autumn, and by an abundance of seed, but, beyond an odd half-starved blossom, the spring result was most unsatisfactory; the plants raised from seed being no better. This, however, was on the hot gravelly sub-soil at Kew. Nevertheless, I am compelled to say the result here, on our cold clay sub-soil, proved no more satisfactory even when artificially made beds of peat and leaf-soil were prepared for them. Nor is this species an exception; it is, as I trace it, characteristic of all the mountain species. Let us for a moment examine the conditions under which they naturally grow, and possibly we may get some clue to those conditions essential to success. In almost every case their natural habitat is on the banks of mountain streams, where, on the ledges formed by a deposit of gradually accumulated rich alluvial soil, their roots find the special nourishment they require with perfect drainage; and no doubt the shelter of their position, supplemented by the overhanging branches and adjacent vegetation, helps to protect their young spring growth, which I take to be a matter of the utmost importance, as on its protection hinges the vigour of the summer bloom. Mr. Whittaker, of Morley, near Derby, has been very successful with both A. glandulosa and the blue variety of A. leptoceras, and he tells me that he grows them in a thoroughly drained, deep, rich, alluvial loam-soil; the same were the conditions of Mr. Grigor's success, and, in adapting those conditions to the various localities where their successful culture is aimed at, cultivators must use their own judgment, always remembering that shelter from direct morning sunshine should be secured for the spring foliage.


Root Graft of Wistaria.

Grafting on Roots.—Good grafting is the readiest way by which a great many tuberous, herbaceous, and shrubby plants may be propagated; and among those multiplied in this manner in most good nurseries, we may instance Peonies, Roses, Clematis, and Aralias. This plan of propagation has many advantages, and may be resorted to with success in the case of such plants as do not strike readily from cuttings; of these Bignonias, Wistarias, and many other shrubs are familiar examples, and of late years American fruit-growers have propagated Vines, Apples, Pears, and Plums on an extensive scale in this manner; they dig up the roots of the wild species and varieties of these fruits from the woods, and graft them during the winter months, after which they are buried in a cool but frost-proof cellar, so as to be ready for being planted in spring. In the case of choice decorative shrubs and other plants, root-grafting is most successful when it is done in a heated propagating-case, and it is advisable that the roots be started in a warm atmosphere, so as to have them a little in advance of the scions. It is a matter of but little moment what kind of grafting is adopted, provided it be neatly and quickly done with a clean, sharp knife. Whip, cleft, splice, or side-grafting or inlaying are alike successful, and that method may be used which is most convenient. Our illustration shows how root-grafting is effected in the case of the Clematis, Wistaria, and Dahlia; but the intelligent operator may adopt any plan which convenience or ingenuity may suggest.—H. B.

The Produce of French Gardens.—According to some figures cited by M. Joly before the Central Horticultural Society of France, and taken from the records of the Custom House, the total quantity of fruits exported to England, Belgium, and Germany amounted in 1874 to nearly 80,000 tons. In 1874 the quantity exported was more than double that in 1873. Of dried vegetables over 23,000 tons were exported in 1874, Chestnuts 6000 tons, and of Potatoes the enormous quantity of nearly 175,000 tons. The amount of money we now pay to the French for garden produce is enormous. Those weights are surprising enough in themselves, but when it is considered that a great deal of the produce is of the very choicest description, and worth a good deal per pound (as in cases of early Asparagus, choice fruit, winter Lettuce, &c.), then the meaning of those figures may be fully understood. Our growers, and, perhaps, our politicians, too, would do well to bear those facts in mind, for there must be something instructive in the conditions which give rise to such a state of things.

THE LIBRARY.

REMINISCENCES OF FEN AND MERE*.

In this pleasantly-written book, we have details of the fens of Norfolk, Cambridge, and Lincoln, and especial reference to the enormous drainage works by which hundreds of acres of these submerged lands have been reclaimed and made amenable to cultivation. The work also contains much pleasant information regarding the sports, amusements, and occupations of the fen people, together with notes on the various distinguished artists who have at one time or other visited the district, and painted its Dutch-like scenery. The work is profusely illustrated with tinted plates, which vary much in quality, and some few of which had better have been omitted; the best of them is a "Deserted Mill in Winter," by Mr. E. W. Cooke, R.A. The wild plants of the district are sparingly alluded to; and Ophrys Lœselii, Typha minor, Parnassia palustris, Pilularia globulifera, and two or three forms of Drosera, are cited as not uncommon. The extremely rare Swallow-tail and Large Copper Butterflies were also formerly found here, but of late years they have disappeared. We are told that the American Water-weed (Anacharis alsinastrum) was first found in a small pond in Sir George Staunton's park, whence it was sent to the Cambridge Botanic Gardens as a curiosity, and from there it somehow escaped into the Cam, which soon became choked by it, and thence it spread rapidly all over the fens. One of the characteristics of this plant is, that pieces cut or broken from the parent plant sink to the bottom of the pond or stream, where every particle roots and grows. The author furnishes some interesting information respecting deposits of Hazel Nuts, which are found nearly all over the Fen district; the origin of such deposits is doubtless owing to the sudden submersion of woods by inroad made by the sea. *A propos* of the supposed subsequent germination of some of these ancient nuts, the author quotes a letter from Dr. Hooker, from which it appears that the late Dr. Lindley's oft-quoted report of the germination of Raspberry seeds taken from a Roman tomb at Dorchester, where they had been buried from 1600 to 1700 years requires to be received with some degree of caution. It appears that the late Prof. Henslow took some of the seeds home and found that in all of them the germ was destroyed, and that they could not possibly have germinated. It appears that the ancient seeds were handed round a crowded meeting on an open flat tray, and that on a similar tray fresh seeds were exposed for comparison. It is therefore supposed that some of the fresh seeds became accidentally mixed with the old ones, and that it was in reality these which grew into plants as related in the "Theory of Horticulture," and not those taken from the tomb in question. The book will be welcome to many, especially to those who reside in the districts to which it more particularly refers.

JUMPING SEEDS AND GALLS.

At a late meeting of the Academy of Sciences of St. Louis, Mr. C. V. Riley exhibited certain seeds which possessed a hidden power of jumping and moving about on the table. He stated that he had recently received them from Mr. G. W. Barnes, of San Diego, California, and that they were generally known by the name of Mexican jumping seeds. They are probably derived from a tricoccous Euphorbiaceous plant. Each of the seeds measures about one third of an inch in length, and has two flat sides, meeting at an obtuse angle, and a third broader, convex side, with a medial carina. If cut open, each is found to contain a single fat, whitish worm, which has eaten all the contents of the seed and lined the shell with a delicate carpet of silk. The worm very closely resembles the common Apple worm (Carpocapsa pomonella), and indeed is very closely related, the insect being known to science as Carpocapsa saltitans. It was first recorded by Westwood in the proceedings of the Ashmolean Society of Oxford, in 1857 (iii. 137, 138), and repeatedly referred to under the name of Carpocapsa Dehaisiana in the "Annales" of the French Entomological Society for 1859.

The egg of the moth is doubtless laid on the young pod, which contains the three angular seeds, and the worm gnaws into the succulent seed, which, in after growth, closes up the minute hole of entrance, just as in the case of the common Pea weevil (Bruchus pisi). Toward the month of February the larva eats a circular hole through the hard shell of its habitation, and then closes it again with a little plug of silk so admirably adjusted that the future moth, which will have no jaws to cut with, may escape from its prison. A slight cocoon is then spun within the seed, with a passage-way leading to the circular door; and the hitherto restless larva assumes the quiescent pupa state. Shortly afterwards the pupa works to the door, pushes it open, and the little moth escapes. When ripe, the shell is very light, and, as the worm occupies but about one-sixth the inclosed space, the slightest motion will cause the seed to rock from one of the flat sides to the other. But the seed is often made to jerk and jump, and, though this has been denied by many authors, Mr. Riley has had abundant proof of the fact, and has seen the seed jerked several lines forward at a bound, and raised a line or more from the surface on which it rested. If the seed be cut, the worm will soon cover up the hole with a transparent membrane of silk; and if two of the opposite angles be cut, the movements of the worm can then be seen if the seed be held against the light. It thus becomes evident that the jerking motion is conveyed by the worm holding fast to the silken lining by its anal and four hind abdominal prolegs, which have very strong hooks, and then drawing back the head and fore-body and tapping the wall of its cell with the head, sometimes thrown from side to side, but more often brought directly down, as in the motion of a woodpecker's head when tapping for insects. In drawing back the fore-body the thoracic part swells, and the horny thoracic legs are withdrawn, so as to assist the jaws in receiving the shock of the tap, which is very vigorous, and often given at the rate of two a second and for twenty or more times without interruption. It is remarkable that this, of all the numerous seed-inhabiting Lepidopterous larvæ, should possess so curious a habit. The seed will move for several months, because, as with most Tortricidous larvæ, this one remains a long time in the larva state after coming to its growth and before pupating.

The following account of the plant, received through Captain Polhamus, of Yuma, is given by Mr. Barnes. It seems to be called both Yerba de flecha and Colliguaja by the Mexicans:—"Arrow-weed (Yerba de flecha) is the name which the shrub bears that produces the triangular seeds that during six or eight months have a continual jumping movement. The shrub is small, from 4 to 6 ft. in height, branchy, and in the months of June and July yields the seeds, a pod containing from three to five seeds. These seeds have each a little worm inside. The leaf of the plant is very similar to that of the 'garambullo,' the only difference being in the size, this being a little larger. It is half an inch in length and a quarter of an inch in width, a little more or less. The bark of the shrub is ash-coloured, and the leaf is perfectly green during all the seasons."

Mr. Riley stated that the seed of Tamariscus was known to be moved by a Coleopterous larva (Nanodes tamarisci) that fed within it; and he concluded by describing and exhibiting a still more wonderful jumping property in a seed-like body which may be observed in some American woods. It is a little spherical, seed-like gall produced in large numbers on the under side of the Post and other Oaks of the white Oak group. This gall drops in large quantities to the ground, and the insect within can make it bound twenty times its own length, the ground under an infested tree being sometimes fairly alive with these mysterious moving bodies. The noise made often resembles the pattering of rain. The motion is imparted by the insect in the pupa and not in the larva state. Mr. Riley presented a description of the gall, which may be known by the name of Quercus saltatorius, the black fly which issues from it having been described as Cynips saltatorius by Mr. H. Edwards, of San Francisco.

The Root-Cap.—The idea held by the earlier botanists, that the tips of all roots consisted of spongy masses of tissue, by means of which plants were enabled to soak up their food from the soil, has, with the aid of the microscope, been entirely discarded. The term spongiole, which was given to these theoretical bodies, is a landmark of departed ignorance, and furnishes a striking contrast with the known structure (viz., the root-cap), with which the tip of every growing root is covered. With the leading botanists of to-day a root is considered to be an outgrowth protected by a cap. This definition seems very short, but if anything further is added, there comes with it a number of exceptions. The name which this covering to the root-tip has received is in itself very descriptive, as it is truly a cap, consisting of a number of layers of quite dense cells surrounding the extremity. These root-caps vary in size in different species of plants; sometimes they are so small that only with the high powers of the microscope can they be seen, while on the other hand they may be readily observed with the naked eye.—B. D. Halstead, in the "Gardeners' Monthly."

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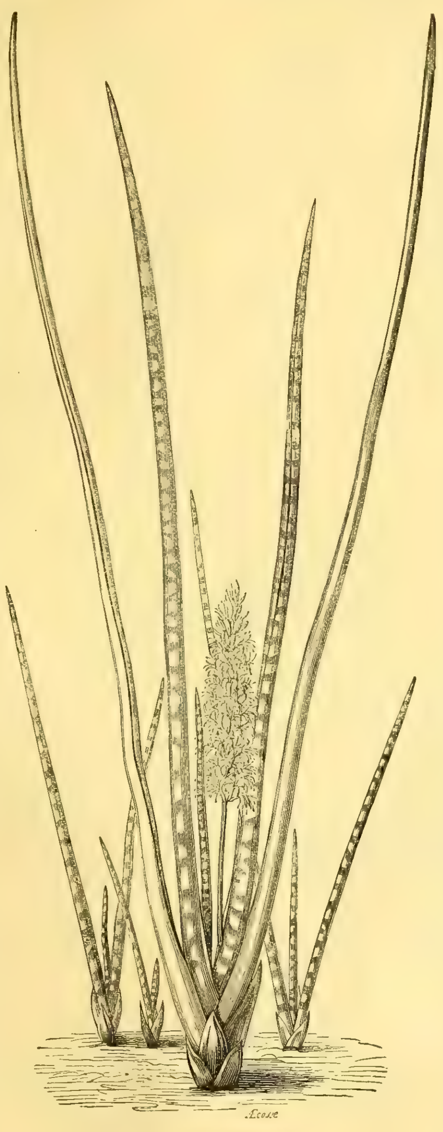
* "Reminiscences of Fen and Mere." By J. M. Heathcote. London: Longmans, Green & Co. 1876.

THE INDOOR GARDEN.

SLENDER-LEAVED BOWSTRING HEMP.

(SANSEVIERA CYLINDRICA).

The Sansevieras, which are nearly related to the Dracænas or Dragon-trees, are natives of the warmer parts of Africa and India, several species being grown in our hot-houses mainly for the beauty and singularity of their leaves, which are all radical, and either strap-shaped as in the well-known S. variegata, or thong-like, as in the subject of our illustration. The tough fibres of the long narrow leaves have been utilised for cordage, and especially for bow-strings by the African aborigines; hence the popular name. The species which we now figure is well worthy of cultivation, its leaves being of a dark green colour, covered with zebra-like markings of a lighter tint. All the species grow well in a warm greenhouse or plant stove, as they form singular and attractive objects planted out in the deep moist border of a warm conservatory, a position in which they make vigorous growth. S. guineensis is the African species, and S. Roxburghiana is the Moorva of the Indian peninsula, its fibre being very tough and durable, and especially suitable for the manufacture of fine string or cordage. S. zeylanica and S. cylindrica are not uncommon in gardens where they are grown as fine-foliaged plants, the flowers of all the kinds being small and unattractive. B.



Slender-leaved Bowstring Hemp.

SOLOMON'S SEAL AS A POT PLANT.

This is one of those old-fashioned plants that have of late years had a new career opened up to them. From time immemorial this hardy British plant has found a place in herbaceous beds and borders, but very often in a poor and exhausted state. To grow it in perfection it requires to be frequently divided, and to be planted in light rich soil. Left to itself, it becomes overcrowded, and soon exhausts the soil in which it grows by its vigorous habit and rapid increase of stems. Under good cultivation the latter rise from an average height of 18 in. or 2 ft. to 3 ft. or more; and to see plants so high, clothed with fine foliage from base to summit, and furnished with silver bells—well-nigh innumerable—is one of the most unique and pleasing sights which we have among flowers. This distinctive beauty, too, is far more apparent in pots than in the open ground; for the Solomon's Seal is one of those plants that improve upon a nearer or closer acquaintanceship. Few plants, indeed, have a more striking effect on a stage or shelf. Plants of it with single or three or more stems are admirable for window furnishing. The form and style of growth are also well adapted for the furnishing of vases or baskets, and the plant is as accommodating as it is beautiful. It may be potted up any time after October and forced into flower with a moderate heat. Small pieces with single stems may be potted in light soil and flowered in 4-in. pots. These small plants are useful for small stages or for cutting for vase furnishing as soon as they are in flower. Pieces with from three to four shoots in 6-in or 8-in. pots are the most useful and effective; though large masses are also sometimes potted up for centres of groups, for which the peculiar arched style of growth of the Solomon's Seal renders it especially well fitted. Plunge the plants in a bottom-heat of 55° or 60°, and subject them to a surface temperature of 55°. With such moderate forcing they will soon advance into full leaf and flower. As soon as this stage is reached, they may be removed to a cooler temperature of the sitting-room or window-garden, in either of which places they will continue long in bloom, and cannot fail to give satisfaction. The foliage is almost as beautiful and useful as the flowers. There is a peculiar freshness and beauty as well as originality of style about the Solomon's Seal, which gives it a special distinctness and value among Ferns and similar plants. We have found the weaker shoots that have not flowered particularly useful for mixing among flowering masses of forced Lilacs, Rhododendrons, and Azaleas, and the branches with their accompanying wealth of pendent bells are perfect in their blending of white and green. These same flowers, mounted either singly or in threes, also form unique and valuable material for bouquet makers. They work in well with other flowers, and form dividing lines or margins of great distinctness. But it is as a pot plant that we would especially recommend the Solomon's Seal. By dividing a stool or two of it every year and planting at 18 in. or 2 ft. apart in fairly good soil, a sufficient stock would always be kept up for potting, for forcing, or for potting up merely for flowering in the window or conservatory. For the latter purpose the plants need not be potted up till the middle of March. They might then be set in a cold pit or any out-of-the-way place till they have made some progress, or be placed in the window at once, where the whole of their growth could be noted and seen. After flowering, they could be returned to the ground, to be kept clear of weed during the summer, and potted up again the next or following season. There are several varieties, such as Polygonatum angustifolium, or narrow-leaved; P. latifolium, or broad-leaved; P. multiflorum, many-flowered; P. vulgare flore-pleno, double-flowered; and a small variety, P. vulgare minor. But the latter is really the most useful for the purpose of potting up as above described, and most of the other varieties are comparatively rare. As to the double variety, the doubleness may be said to spoil its beauty, as it does also that of the Lily of the Valley, to which, notwithstanding its stature and character, the Solomon's Seal is nearly allied.—"Villa Gardener."

FREESIA LEICHTLINIANA.

This charming and delicately-perfumed little plant has now been in bloom in my conservatory for over a month, having commenced to open its pretty flowers (which are of a delicate primrose yellow, with a deep and clearly marked golden blotch on the front of the lower petals) about the end of February, and continuing in beauty throughout the whole of March. The perfume exhaled from its blossoms is of an exquisite and peculiar character, not exactly resembling that of any other plant with which I am acquainted, but reminding one of what the concentrated essence of the common Primrose of the woods might be. This pretty plant was first introduced into this country by the New Plant and Bulb Company, at Colchester, who exhibited a well-bloomed potful of it at the spring show of the Royal Botanic Society, Regent's Park, last April, when it received a botanical certificate. A woodcut of it was given in a contemporary on the 8th of May last, but it greatly exaggerates the size of the flowers and the stature generally of the flower-stem and foliage. My tallest flower-stem was but 8 in. in height, and most of the others not more than 7 in., whereas the woodcut gives the idea of an altogether stronger, thicker-stemmed, and taller-growing plant than this little gem really is. It is a native of the Cape of Good Hope, and is exceedingly quick of increase, the two bulbs sent me last season from Colchester having divided into half-a-dozen bulbs, nearly as large as I received, all of which have bloomed well this spring, and no fewer than twenty off-sets, varying from the size of a Sweet Pea to a full-sized Marrowfat edible Pea, and even two of these bulblets are now showing heads of bloom. It is, therefore, evident that it is an extremely free and early bloomer when properly managed, as though at Colchester the blooms did not begin to expand till the middle of April, with me without any kind of forcing they began to open on February 27. It is now also seeding freely, and is said to be in all probability perfectly hardy.

W. E. Gumbleton.

Boiler Water for Plants.—There is a pit here some 40 ft. long used during the winter for bedding stock. It is heated by pipes connected with the boiler, which warms the greenhouse, &c.; the feed-tank is supplied from the Water Company's constant service. Until lately all water used had to be carried into the pit, with the further disadvantage that, being drawn direct from the main, it had to be used in a cold state. The various paragraphs that appeared in The Garden some time since had much to do with the carrying out of the following arrangement:—The hot-water pipe in the pit was tapped in the under side, and a short length of iron pipe was screwed in, connected with a ⅜-in. ball-cock enclosed in a small cistern, the same as those used for boilers of kitchen ranges; this communicates with a 30-gallon galvanized iron tank standing under the stage, the water in which consequently always stands at the level of that in the small cistern, thus affording a convenient supply of water with the chill off at all times. It was fixed on the 29th of February last, and has given every satisfaction, not the slightest prejudicial effect on the plants having been noticed. Of course, with the above plan it is essential to have an ample supply with which to feed the tank of the boiler.—H. A. W., *Surrey*.

White-flowered Indian Jessamine (Jasminum Sambac).—This is a free-growing stove climber, producing abundance of somewhat primrose-shaped white flowers, quite as strongly scented as those of a Gardenia; the small flower-sprays of it are, therefore, useful for bouquets. An old plant of it here, which flowered more or less all last summer and autumn, and which was potted and cut back about a month ago, is now producing quite a multitude of flowers from the old wood, and will no doubt go on flowering for a long time. It does best in a 14-in. pot, I think, and a larger size if the plant be some years old. It delights in loam and peat in equal parts, with a little sand and rotten cow manure, and the shoots should be trained near the light. An ordinary stove temperature suits it, but it must not be subjected to a too close atmosphere. Pinching the summer growths sometimes increases the number of flowers; but it blooms most freely in early spring, and it is the better for being pruned in pretty closely before potting, which causes it to break back, and keeps such a straggling subject within bounds, and all the young shoots produce flowers. Jasminum Sambac should be grown extensively wherever sweet-scented flowers are appreciated, and it makes an excellent companion to the Neapolitan Violet.—J. S.

Best Winter-flowering Gesnera (G. cinnabarina).—Of the several popular varieties of this Christmas-blooming species, the above is generally reckoned the best, being a very free flowerer, and of robust habit, with very ornamental foliage. One plant in a 6-in. pot makes a specimen of itself, very suitable for a table or vase. Gesneras may be propagated by means of leaves, buds, or cuttings; but as bulbs are about as easily procured as these, they are in every way better. A succession of flowers may be had by starting the bulbs in succession; but now is the time to put in those intended for winter decoration. The most expeditious way is to place the bulbs about 1 in. asunder in a shallow pan, using a compost of equal parts of sifted loam, peat, or leaf-mould, and sand. Cover them over ½ in. deep, and plunge them in a bottom-heat of 80° or 85°. When fit to handle well, pot them off into 6-in. pots, using the same light compost, with a little rotted manure added, and after potting, place them in stove-heat, and keep them there till they flower. In fact, to get them to throw their flower-spikes well up above the foliage, and to expand freely, they should not be subjected to a lower temperature than from 65° to 75° in winter, and should have as much sun and light at that season as possible. The plants may be freely watered when growing, but good draining must be first insured. When done flowering, let them go gradually to rest, withholding water altogether in the end, when they may be stored till starting time on a dry warm shelf. A low damp temperature is fatal to the roots.—Chef.

The Calla at Home and in Cultivation.—Many years ago, at the junction of the Black and Yellow Rivers, at the Cape of Good Hope, I saw untold millions of Callas growing in the swamps, lakes, and lagoons. I believe they never dry up in that region during the hot and droughty seasons peculiar to Africa, but are at all times submerged. There are but few plants capable of existing under such dissimilar conditions in cultivation as the Calla. Treated as an aquatic, a terrestrial, or a sub-aquatic, it readily adapts itself to the situation, and flourishes. Notwithstanding that they succumb to zero's icy touch, they will endure considerable cold, and live, if preserved from frost.—W. T. Harding.

Evils Arising to Plants from Painting with Coal Tar.—A few years ago, says a correspondent of the "Gardeners' Monthly," I had some experience with coal tar in two forcing pits, an account of which may be interesting. The wooden frame-work of the beds having become decayed, it was necessary to renew them. In order to make the new frames last as long as possible, the insides of the planks were given a coating of coal tar. The work was done in summer, so that it had time to dry and harden before the soil was put in. I had recommended to my employer pitch tar in preference to the cheaper article, fearing that bad effects might result if the high temperature in the pits should melt the coal tar; but in the autumn, when the soil was placed in the beds, so hard and dry had it become that I thought the work could not be done better, or more cheaply, and my earlier apprehensions were removed. Winter-flowering plants and early vegetables occupied the beds, and all did well for about three months after being planted. The weather having becoming intensely cold, the heating apparatus had to be kept at work night and day. Just at this time the plants seemed to lose their healthy look; Roses and Bouvardias began to sicken, and their leaves to turn yellow and fall off. I at once suspected the coal tar, and in order to remedy the evil as far as possible, I removed these plants out of the beds and potted them. I found that their young roots were black and lifeless from being poisoned by the tar. The continual heat from the pipes immediately under the beds had melted it, and the gases being absorbed by the soil poisoned it. In other parts of the pits, Carnations, Heliotropes, and Stocks were planted; but they did not appear to suffer in the least. Lettuces, however, didn't seem to like their quarters any better than the Roses and Bouvardias. Parsley grew quite as well as if nothing unfavourable had touched its roots. I had no satisfaction from these pits that season, and when summer came round again, I took the first opportunity to remove all traces of what had given me so much trouble, and refitted the frames with hard Pine planks, after which all went well.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Madame Vaucher Pelargonium for Cutting.—This well-known variety is still the most useful kind for affording white flowers in a cut state, or for their effect on the plants at this season. Although one of the oldest kinds it is not grown in great abundance about London.

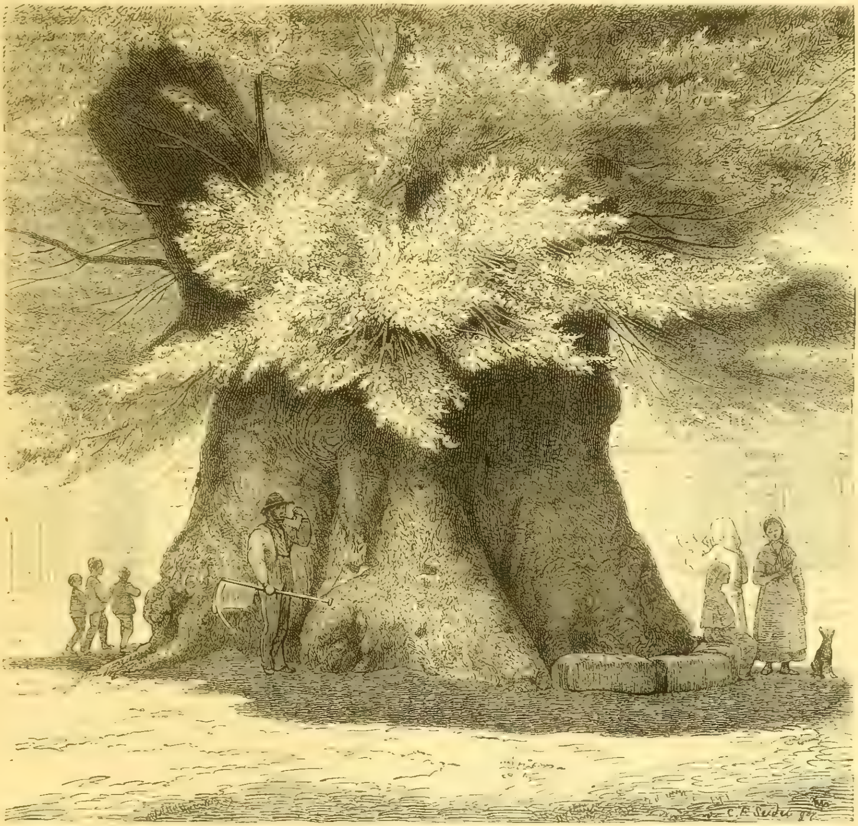
Croton trilobus Alberti.—This is one of the hastiferous forms of Croton which has been recently introduced from the Islands of the South Sea. In the present form the leaves are wedge-shaped at the base, with a pair of lateral lobes, produced at different points in different leaves, but within the lower half of the leaf, the middle lobe being oblong-spathulate, bulged near the end, and terminating in a short acute point. The middle and lateral veins are yellow, while a few yellow dots are scattered aberrantly here and there over the surface—this yellow colouring passing to red as it acquires age and exposure.—W. Bull.

Double Yellow Auricula.—I am pleased to find that this old but resuscitated plant has flowers not only double, but deliciously sweet-scented, a property which renders them doubly attractive in the greenhouse.—A. D.

TREES AND SHRUBS.

GIGANTIC ELM AT SCHIMSHEIM, HESSE.

Although not the largest Elm tree in Germany, the Schimsheim Elm, of which we give a woodcut from a drawing from nature, by Herr C. F. Seidel, is worthy of notice on account of the beauty of its form. The tree in question stands in the market place of Schimsheim, a small village some four or five miles from the town of Worstadt, in the Grand Duchy of Hesse, and is described by Herr Seidel as being nearly 100 feet in height. The bole is hollow, but the remaining wood is sound and healthy. The circumference of the stem, close to the ground, is 50 ft., at 1 in. above the surface (3.28 ft.) 44 ft., and at 2 in. (6.56 ft) 34 ft. There are, unfortunately, no historical particulars extant about this tree, the date of its plantation cannot, therefore, be ascertained with accuracy. Herr Seidel estimates its age at a little over 600 years. It must be remarked that the Elm is not indigenous to that part of Germany, but is an introduction from Southern Europe. In France the Elm was not regularly introduced until the middle of the sixteenth century, about the time of Francis I. Although not the tallest Elm in the Fatherland, the Schimsheim giant ranks amongst the four great trees of Germany. The Luther Elm at Pfifflingheim exceeds it in height by nearly 50 ft., while its circumference is only 25 ft. at ft. above the surface of the ground—the Schimsheim giant exceeding it at that height by nearly 10 feet.



Elm at Schimsheim, Hesse.

NEW LIGHT ON TRANSPLANTING TREES.

Permit me to ask Mr. Michie if he has well weighed all the circumstances of the case which he records at page 364, and if his long experience in transplanting trees generally confirms the newly-propounded view, that trees transplant more successfully without previous preparation in the shape of root-pruning than with it? Cultivators will have a difficulty in accepting this new doctrine, for the simple reason that it is opposed both to theory and practice. There is an accumulation of evidence to the contrary. It is not generally necessary to prepare trees a year or two previous to planting in the way Mr. Michie describes, but that a previous check greatly insures a successful removal, I have no doubt whatever. I never knew an instance in which its advantages were not apparent. Is not the whole practice of transplanting nursery stock periodically based upon the fact that it multiplies the roots, keeps them "at home," and thereby insures a safe transfer when the plants leave the nursery; and in this respect what difference is there between a young and an old tree? Is it not a well-known fact, also, that the first root-pruning or lifting of a fruit tree which has not been operated upon before completely stunts it for the first year or two, while you may move it every two years afterwards without preventing growth or losing a crop of fruit? What is it which makes an old tree more difficult to move than a young one, though both may be equally vigorous? Is it not because the check is greater owing to the difficulty in getting a proportionate quantity of roots away with it? Cut round it, however, pretty close to the stem; sever all the rambling tap and other roots, and in one or two years you can move the tree without much trouble, and with a tolerable certainty of success. Failure in mostly all cases is the result of a severe check to the roots, a too sudden stoppage of the supplies; but withdraw the supply by degrees, and there is little danger. J. S. W.

Brilliant Tree Foliage.—In the village of Union Springs, near Cayuga Lake, a tree-planting society was formed many years ago, and several hundred trees of the Sugar and Red Maples were planted along the different streets. Nearly every autumn these make a gorgeous display of crimson, scarlet, pink, and orange, in an almost endless number of shades and different modes of blending. The absence of frost till late in autumn, owing to the proximity of Cayuga Lake, increases the effect. There are two or three trees of surpassing splendour, which maintain this distinction every year. Why would it not be as desirable to give a brilliant termination to the foliage of the season, as to plant for the two or three days of the blooming season in spring?—"Albany Cultivator."

The Value of Timber in the Highlands.—An illustration of the value of timber on waste lands in the Highlands is afforded by a sale of wood which took place on the estate of the Earl of Cawdor, in Nairnshire, the other day. In 1820, two hills on the Cawdor property of about 800 acres in extent, and of almost no agricultural value, were planted with Fir and other trees, and after successive thinnings, the sale of which realised large sums, the remainder of the wood has just been sold off for the sum of £16,000. The sums realised for the wood on this waste land during the fifty years is stated to be equal per acre to the return for the best arable land in the country.

Conservation of Forests.—This is unquestionably a subject of great importance. It is now occupying, says Dr. Balfour in an address to the "Scottish Arboricultural Society," the attention of the Government of India, and of many other Governments, and it will sooner or later engage that of all our colonies. The physical history of every country proves incontestably that a moderate extent of forests, especially on mountain slopes and elevated rocky ground, where tillage is impracticable, promotes in a high degree both the agricultural and manufacturing interests of individuals, as well as the physical soundness and productive resources of extensive countries. It appears that the influence of forests in a physical, economical, and hygienic point of view, is deserving of a more complete investigation than it has yet received. By felling trees which cover the tops and sides of mountains, men in every climate prepare, at once, two calamities for future generations—the want of fuel and scarcity of water.

Colossal Redwood Trees (Sequoia sempervivens).—At a recent meeting of the California Academy of Sciences, Dr. A. Saxe made a preliminary report on a grove of colossal Redwood trees that have been discovered on the San Lorenzo. The trees are in a forest around the head waters of that stream. One of them eclipses all that have been discovered on the Pacific Coast. Its circumference as high as a man can reach, standing and passing a tape line around, is a few inches less than 150 ft. This is beyond the measurement of any of the Sequoias in the Calaveras Grove. The height now is estimated at 160 ft., and a part of the top lying on the ground riven off by lightning or a tornado, is over 100 ft. in length. The other trees in the vicinity are not so large, but all are of immense girth. This region has but recently been explored, and what other marvels of vegetation it contains remains to be seen. The stumps of Redwood trees of immense proportions have been reported from time to time to the Academy by explorers in the Mt. Diablo range along the hills back of Oaklands; but now we are likely to have further discoveries of these majestic conifers in their glory, height, diameter, and foliage.

The Hardiest Gum Trees.—Young plants of the Tasmanian Eucalyptus coccifera are reported to have borne 17° of frost in France this season without receiving any injury. This species is doubtless one of the hardiest of the genus, as it inhabits the summits of mountains 3000 ft. to 4000 ft. high in Tasmania. It has long been cultivated in England, and it was figured in the "Botanical Magazine," plate 4637, in 1852; Sir William Hooker there says, "It forms a most graceful tree, 20 ft. or more high, in the gardens of Mr. Veitch [presumably of Exeter] and about London, braving our severe winters when trained to a wall." From the latitude and altitude of the home of this species, one would expect it to be much hardier than E. polyanthemos, which is rarely injured in the open ground at Kew. We may here mention a few other Tasmanian species likely to prove hardy in the south-west of England and Ireland:—E. Risdoni, the Drooping Gum of the colonists, described as a handsome tree; E. urnigera, a tree with spreading branches, sometimes attaining 50 ft., not uncommon in Alpine districts; E. vernicosa, a dwarf bushy shrub with very small leaves, found at the summits of Mount Fatigue and Mount Lapeyrouse; and E. Gunni, a small tree, abundant in Alpine districts at an elevation of 3000 ft. to 4000 ft., often forming small forests; it is the "Cider Tree" of the colonists. Seeds of other species, also found on the mainland of Australia, should be procured if possible from Tasmania, because tehy are likelier to prove hardier from thence. Such are E. coriacea, E. amygdalina, E. globulus, and E. viminalis.—"Gardeners' Chronicle." [When in California, we were told by an extensive planter of Eucalypti that E. Gunni proved to be a very hardy species there.]

Scotch Fossil Trees.—We learn that six trunks of large trees have been obtained at Craigleith Quarry since 1826. The largest, 36 ft. long and from 12 ft. to 14 ft. in girth, has been taken to the British Museum, and is to be set up erect. Another is nearly 30 ft. long, and has been removed to the Botanic Gardens. The trees were Conifers. The surface of each is bituminous coal, varying from one-twentieth of an inch in thickness to 2 in. The trunks inside of this coaly exterior consist of carbonate of lime, carbonate of magnesia, carbonate of iron, and free carbon in varying proportions.

Viburnum dilatatum.—The "Botanical Magazine" describes this as a hardy white-flowered Japanese shrub, with large leaves somewhat like those of the Hazel Nut. There are ten or twelve Japanese species of Viburnum, including the present plant, which promises to be a welcome addition to our gardens. Some of the Viburnums owe much of their beauty to the fact that they bear enlarged but abortive flowers in a way analogous to those of the Hydrangea. In the present species, however, the flowers are all normal, forming dense rounded clusters at the apex of the downy stem.

Tropical Trees During the Dry Season.—Professor Ernst, of Caraccas, states that many woody plants of the Venezuela flora lose all their leaves during the dry season, even when the ground is copiously watered for the purpose of preventing their fall. Several large-leaved plants, such as Cassia, Mahogany, and many others, exhibit this phenomenon. The new foliage starts usually when the rainy season sets in, but if the rains come very late, as they did in 1875, many of these trees unfold their buds and develop their leaves at a period when the ground is dry and hard, the tropical heat very intense, and the air extraordinarily dry. This curious periodicity has been casually noticed by several writers, but no explanation has been hitherto offered. Professor Ernst has given this subject careful study, and now states that in general those trees which cast their foliage in the dry season have compound leaves of rather delicate texture. From such leaves transpiration is exceedingly rapid, and early carries away all the available water. When there is no more moisture within reach of the plant, the leaves separate from the stem. In this wholly or partially leafless condition the trees remain until the end of April or the beginning of May, when the moist winds from the north-west, as precursors of the tropical rains, awake the slumbering vegetation. Of course the trees cannot absorb by their parts above ground any great amount of moisture, if they do any at all, but the slight transpiration which had been going on from stems and young shoots is now checked. The small amount of moisture which the roots can take from the parched soil is not without speedy effect upon the branches and buds to which it is carried. The buds soon open. But in the spring of 1875, when there was not a cloud to be seen in May, and the west wind at evening brought little relief from the scorching drought of the day, and the baked crust of the soil everywhere showed no trace of moisture, the trees put forth their leaves as usual!

NOTES AND QUESTIONS ON TREES AND SHRUBS.

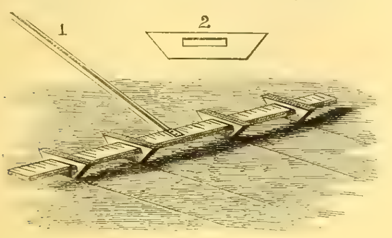
Aucuba Pollen.—How long will this keep good? I have some which I bottled in the spring of last year, and it looks, through a pocket-lens, as fresh as some which I have just taken off the same plant.—W. T. T.

Flowers of the Judas Tree in Salads.—In Constantinople I much enjoyed the flowers of the Judas when used in salads. They are gathered fresh from the tree which blooms gloriously in these regions, and are mixed with good Cos Lettuce. The flavour is pleasantly acidulous, and the effect in the dish rather pretty.—C. W. Quin.

The Flowers of the Chinese Quince.—The flowers of Cydonia sinensis are, though not so far as I have seen them, conspicuous away from the tree like those of the Japan Pyrus, yet they are so very beautiful that I am surprised the plant is not more grown for their sake. The flower-buds, where exposed to the sun, are a deep rich crimson; when the flowers open and the buds unfold into shell-like petals, the old highly coloured portions of the outside of the bud remain just as they were in colour, the inside of the petals and the parts of the outside not exposed to the light in the bud stage being white. The result is a variegation of a most pleasing kind. I speak of the tree as grown on walls in the south of England.—V.

A HANDY GARDEN MARKER.

Markers, for use in the garden, are among the implements that are home-made; in a rough way, pins are set in a piece of joist, and this, when furnished with a handle, answers a good purpose. Those who like to have their garden implements neatly made will be glad of the following description, sent us ("American Agriculturist") by Mr. D. S. Hibbard, of Carroll County, of a marker which is unlike any we have before figured, and which has the advantage of being readily adjustable to make drills at any required distance apart. He says:—"Plane a piece of inch-board 4 in. wide, and from 4 ft. to 6 ft. long (mine is 6 ft.), and fasten a handle 6 ft. long to its middle, at right angles. The handle should be beveled, so that when in use the board may be in a level position, as in figure 1, and should be firmly screwed on, as it can not be braced. Upon the upper side make scratches square across the board, at every inch of length, and mark the feet and halves and quarters of feet. Then make several pieces of board (fig. 2), each 1 ft. long on top, about 3 in. wide, with each end shaped like a sled-runner, and sharpen the bottom edge suitably for marking drills in the soil. In the middle of each piece, near the top, make a mortice 1 in. by 4½ in. Fit them so that they can be easily slipped on to the long board, or head of the marker, and fastened in any place by wedges. These bits of board can be fastened across the long one at any desired intervals, and the scratches for feet and inches will help to set them square, and to regulate the distances. Such a tool, with good usage, will last a lifetime, and will, I think, mark drills more smoothly and regularly than any arrangement I have seen described."



Garden Marker.

BOTANICAL TOUR IN THE TYROL.

Early in August I started by train between five and six A.M., for Atzwang station, about fifteen miles north of Botzen, that being the nearest point from which to commence the ascent of the Schlern. From Atzwang to Ratze's Baths is a zigzag path up the mountain-side, a sort of rough, narrow horse road by which passengers and provisions are conveyed to the baths, about nine miles distant. Directly on leaving the station the river Eisack is crossed by a rudely but firmly constructed wooden bridge, made of Pine boards. As soon as I had crossed the bridge, and begun the ascent, I met with some well-known Alpines, such as Dianthus superbus, Campanula rapunculoides, Saponaria ocymoides, Polygala Chamæbuxus, Anemone pulsatilla, Selaginella helvetica (this is very abundant where shaded by shrubs and trees), Digitalis ochroleuca, and Orobus vernus. In some places in the wood, where there were few trees, the ground was green with Vaccinium Vitis-Idæa. Higher up, on emerging from the wood, I found walls everywhere charmingly clothed with Asplenium Trichomanes, A. viride, A. septentrionale, and Cystopteris. The fields and hedge banks were gay with Salvia prætensis and Prunella pyrenaica or P. grandiflora (?). After walking some little distance I came upon a few scattered houses, which constitute the small village of Völs. Beyond this the ascent is not so steep for a mile or more as hitherto. In several places the path winds round, or has been cut through hillocks of stones and earth. On these I saw Sempervivum arachnoideum (the Cob-webbed Houseleek), S. montanum (?), Saponaria ocymoides, Helianthemum vulgare, H. Fumana, Dianthus sylvestris, Nothochlæna Marantæ (a solitary specimen), Saxifraga notata (?), and Globularia cordifolia. The last-named is a pretty dwarf evergreen Alpine of trailing habit, with small, roundish, leathery leaves, and pale bluish flowers. For stony ground it forms quite a dense covering. The next few miles, through Alpine meadows, were not particularly interesting until the Pine woods were reached, immediately beneath the enormous perpendicular cliffs of the Schlern. Here I met with Pyrola secunda in great profusion, also Campanula cæspitosa, a species resembling C. pusilla, but with flowers, intermediate between those of the last-named species and C. Zoysii, the mouth of the corolla being contracted like that of the latter species. It was growing in great profusion amongst the washed down *débris* of Dolomite limestone, the fragments being of the size of Walnuts, or even less, and intermixed with very small quantities of soil. Onwards I went through woods composed of Spruce, Silver Fir, and Pine, a somewhat dreary walk, with only the huge summit of the Schlern to be seen, and, as you proceed, a running stream, which when crossed the white-washed buildings of Ratze's Baths become discernible. A more out-of-the-way place it would have been difficult to find in which to build, for the buildings are erected on the highest available situation in the narrow gorge between the Seisser Alp and the Schlern. The waters, which contain sulphur and iron, are conveyed, for the benefit of invalids, considerable distances down from their respective springs to the bath-house by means of hollow tree pipes, the thin end of one being let into the thick end of the other, so as to form a line of continuous piping, sometimes above, at other times under ground.

After arranging to stay at Ratze for a short time, I retraced my steps towards the little wooden bridge, and then to the left, intending to visit the perpendicular cliffs which overlook the bath-house and the Pine forests. Here Pyrola secunda was especially plentiful; I also saw on a shelving bank an Epipactis, but not in flower. After climbing and scrambling for about a mile, I remarked the charming little Pyrola uniflora beneath a huge Silver Fir. It was growing among the decayed leaves on the shady side of the tree. A large blue Monkshood, measuring from 1½ ft. to 2 ft. high, was growing in the more open places, while higher up I came upon acres of the Alpine Rose (Rhododendron intermedium), and still higher occurred the dwarfer Rhododendron hirsutum. Immediately beneath the cliffs, the first plant which attracted my attention was an annual bearing scarlet fruit in whorls up the stem which was much branched and about 12 in. high; it was growing in limestone sand or dust, beneath an overhanging cliff, where it would seldom if ever be subjected to rainfall; I have not yet been able to ascertain its name. All along the ledges and face of the cliff, as high as the eye could scan, Aquilegia Bertoloni was displaying its charming blue flowers and yellow anthers. Next occurred that most singular of all Alpines, Phyteuma comosum, a plant with stiff, leathery, glaucous, jagged leaves, and enormous flower-heads nestling close to the face of the rock, and resembling small purple horns. Its flowers vary in colour, some being much darker than others, but their prevailing colour is light blue tipped with brownish purple. To all appearance it was growing out of the solid limestone rock, the roots penetrating far back into extremely narrow cracks. It is a most difficult plant to extricate. A little further on I found another Phyteuma new to me, P. Sieberi, a kind having flower-heads about the size of those of our native P. orbiculare, with very pubescent leaves, and blue flowers from 2 in. to 6 in. high. Still higher up plants known to me as rarities became abundant, such, for example, as Saxifraga Burseriana, S. Valdensis, Soldanella minima, S. alpina, Cystopteris alpina (?) Pinguicula alpina, and Asplenium Seelosii, the last a very small and singular little Fern, with fronds about 1 in. high, cleft into three small divisions at the apex; it was growing sparingly on a north exposure on detached masses of rock. Of Pedicularis I observed various species; also Pæderota Bonarota, Ranunculus montanus, R. alpestris, R. Thora, R. rutæfolius, Silene acaulis, and Viola biflora; but what pleased me most was a beautiful little Campanula, of very dwarf and tufted habit, with minute roundish-toothed leaves covered with hairs. Its flowers were large, of a bright yet dark purple colour, and extremely handsome; it was growing like its neighbour the Phyteuma, on the face of the solid cliff in the smallest cracks imaginable. Its flowers were so conspicuous that I could see them on the face of the cliff more than 1000 ft. above me. When I got back to Botzen I ascertained from a small illustrated work on Alpines that it was C. Morettiana.

My next excursion was to the summit of the Schlern, which is 9000 ft. above the level of the sea. From the baths it is reached by a narrow and steep winding-path up the Seisser Alps; after the first 2000 ft. have been surmounted the table-land of this great Alps is reached. Here many châlets are scattered about where thirsty travellers can generally obtain milk; then, by turning south-west and crossing the stream on large stones one gains the flank of the Schlern, whence, to the summit, is a very steep grassy slope varied with hillocks, rocks, and stones. Among the Grass, not far from the water, were growing fine specimens of Allium Victoriale. From about 1000 ft. above this to the summit the pasturage was enriched with Alpines, amongst which I remarked a pure white flower about the size of a shilling, which I took, looking at it from a distance, to be Dryas octopetala, but which I found to be Anemone baldensis, a showy plant, which grows from 4 in. to 9 in. in height. Then came Potentilla nitida, with large and showy pinkish flowers, and also a solitary specimen of it with blossoms of a bright rose colour, reminding one of those of Rosa pyrenaica. Sparingly scattered over the turf was Campanula pulla, bearing large dark blue solitary flowers; it was not in tufts, as it grows in gardens, but always solitary, and furnished with flowers larger and finer than those produced under culture here. I also noticed more Phyteuma Sieberi in the fissures; likewise Saxifraga cæsia, Oxytropis cyanea, Aronicum glaciale? Anemone vernalis, Arbutus alpina, Primula longiflora, and Achillea Clavennæ. Gentiana verna, G. nivalis, and G. brachyphylla were sparingly scattered about, but not to be seen without looking for them very closely among the herbage, as with the exception of a few plants of G. nivalis, they were not in flower. On a shelving slope of *débris*, a little below the summit on the east side of the mountain, I saw Papaver pyrenaicum, which in such a situation was very conspicuous. The little white-flowered Androsace obtusifolia was also to be found here, as was likewise that Alpine gem Myosotis alpestris, in tufts about 3 in. in diameter, and from 2 to 4 in. in height, literally covered with bright blue flowers with pink centres. On my descent I noticed on the flank of the mountain acres of the dwarf Pinus montana, with stems about the thickness of one's thigh, the first foot or so of which was erect, while the upper portion was sub-prostrate, sparingly clothed with foliage, the whole being not more than from 4 to 6 ft. in height; beneath this the ground was carpeted with Rhododendron intermedium. WANDERER.

The Pecan Tree.—I satisfied myself, by experiment and investigation, of the value of this as a timber tree, wagon and carriage makers, wherever they have used it, testifying of its value as being equal to the best of White Ash for all purposes of carriage manufacture, possessing equal durability and greater strength and elasticity. At various points on the Mississippi River steamboat carpenters who have used it found it a valuable timber in boat building. As a fuel it has no superior. I find it as easily transplanted as any tree I ever handled, having never lost a tree. It is of vigorous growth, clean, and healthy. The Pecan tree ordinarily commences bearing at about eight years of age. It bears one of our finest Nuts, which sold for the past six years at an average price of £1 per bushel. The Pecan tree is grown readily from the Nut, if it be not allowed to become dry before planting.—L. HARRISON, in "Prairie Farmer." [The fragile and well-flavoured Nut of this tree is now on sale in some London shops. Is the tree planted in England, and how does it get on with us? I do not remember seeing it, but fancy it would thrive well on the chalk in the south of England.—V.]

THE PEAR-SHAPED WALNUT.

(JUGLANS INTERMEDIA PYRIFORMIS.)

As a supplement to our article on the "Walnut and its Varieties," given in last week's GARDEN, we furnish a few more wood engravings illustrating the peculiarities of the curious variety Juglans intermedia pyriformis, a kind which well deserves more than a mere casual mention. The tree which bears this Walnut is of vigorous habit, with stout branches covered with a smooth dark brown bark speckled with grey. The fruit is Pear-shaped or, perhaps to be more correct, Fig-shaped, as will be seen from fig. 1. The sarcocarp is of a bright green covered over with grey points, which are closely similar to those which are formed on the husk of the Juglans nigra. The shells are woody or rather bony, very hard, with the two halves so closely united that they cannot be separated even at maturity. The kernel is small, and is strongly enclosed by the folds of the inside of the shell, and is almost separated in the middle by a thick, hard, and ligneous division. What little there is of the kernel is of an excellent flavour. This plant is said to be a true hybrid between Juglans regia and Juglans nigra, and holds a place exactly intermediate between the two. The general appearance of the full-grown tree recalls that of Juglans regia, which it also closely resembles in its foliage. But it is quite otherwise with the fruit, which much more closely resembles that of Juglans nigra, as will be seen from the sections as shown in figs. 2, 3, 4, and 5. Fig. 2 gives a transverse section of the fruit of the common Walnut. In this section it will be noticed that the shell is thin and fragile, yellow and smooth, or, at any rate, but slightly fissured on the outside. The inside shows a membranous division which is frequently wanting altogether at some points of the circumference. The kernel, which is comparatively large, is nowhere attached to the shell, so that it separates from it with the greatest facility. The two halves of the shell, too, divide with perfect ease, simply lying together without any permanent connection. Fig. 3 gives a transverse section of the fruit of Juglans intermedia pyriformis, with the kernel, and fig. 4 gives a transverse section of an empty shell. Fig. 5 gives a transverse section of the fruit of Juglans nigra, and a mere glance at the three sections will show how closely they resemble each other. The shell of Juglans intermedia pyriformis is very hard, and being of a greyish brown colour, with the surface finely fissured, with pointed asperities rising up here and there. The interior divisions are as hard as the shell itself, limiting the size of the kernel by their thickness, already reduced by that of the shell. The two lateral divisions are thinner, but, as shown in fig. 4, form the cavities next the walls of the shell. These divisions so thoroughly enclose the kernel that it can only be extracted in broken pieces. In the Black Walnut (Juglans

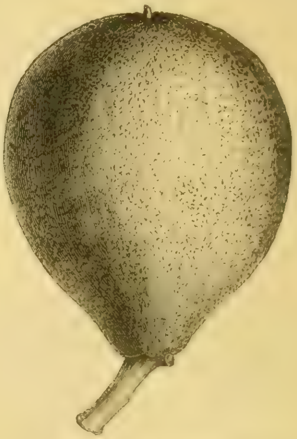


Fig 1.—Fruit of Juglans intermedia pyriformis.

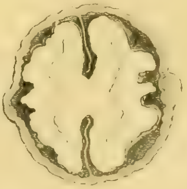


Fig 2.—Transverse section of Common Walnut.

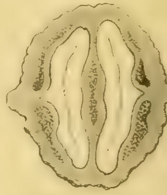


Fig. 3.—Transverse section of fruit of Juglans intermedia pyriformis, with kernel *in situ*.

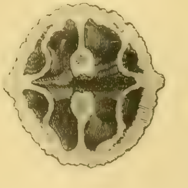


Fig. 4.—Transverse section of Fruit of Juglans intermedia pyriformis, without the kernel.

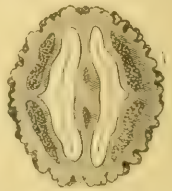


Fig. 5.—Transverse section of fruit of Juglans nigra.

nigra), of which a transverse section is given in fig. 5, the shell is extremely hard and bony, of a greyish brown, the surface being finely fissured. The interior divisions, too, are ligneous and greatly diminish the size of the kernel, which, like that of the Juglans intermedia pyriformis, is so closely enveloped by the internal divisions that it can only be extracted in fragments.

In our last article we described several Walnuts occupying an intermediate position between Juglans regia and Juglans nigra, but in none are the peculiarities of their ancestors so evenly divided as in the interesting variety under consideration.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Winter-flowering Stove Plants.—One of the best decorative autumn and winter flowering plants that amateurs who have the convenience of a stove can grow is the Poinsettia. It is possible that the new double variety may ultimately supersede the old form, but until it becomes more plentiful, and its superiority in every way to the old one has been proved, it will be well to continue the cultivation of the latter. There are several ways of growing the plant, which is easily managed provided a few essentials to its well-being are kept in view, but through a mistaken idea that all plants grown in pots must be made to assume one uniform shape, the Poinsettia is often subjected to an unnatural torturing process that goes far to destroy its true character, and to prevent its gorgeous head of inflorescence attaining the effective size which it would acquire if treated more in accordance with its natural habit of growth. It grows best from cuttings struck in spring and confined to moderate-sized (say at most 8 or 9 in.) pots; and no attempt should be made to induce it to produce more than a single stem, which, if really well managed, will attain a height of 3 or 4 ft., and bear a head 18 in. in diameter. Thus grown Poinsettias are much more effective when intermixed with other plants in the stove than in any other way by which they can be produced, but such plants can only be had by starting the old stools into growth sufficiently early to get cuttings struck in time to admit of their attaining strength enough to bear such heads. Through a disposition to flower Poinsettias in a dwarf state, the old plants are often kept from starting into growth too long, thus producing cuttings much later than they should be, which is simply a mistake, as the dwarfing process, when required, can be much better attained by other means. Plants that flowered through the winter, and which have since been kept dry at the roots, should immediately be cut back to within 8 in. or 9 in. of the pot, watered, and replaced in heat. The cuttings, from their soft nature, do not strike well if allowed to get so long as to necessitate their being taken off in the way usual in the case of most plants; they should not be allowed to get more than 6 in. or 7 in. in length, and ought to be then taken off with a heel consisting of old wood, and placed singly in small pots covered with a bell-glass, in a heat of 70°, shaded and kept moist. Thus treated, not one in a score will fail to root; after this they should be potted on in good loam, well enriched with decomposed manure, kept through the summer with their heads close to the glass, in a light house or pit, encouraging them to grow as strongly as possible without an attempt at stopping. If a portion be wanted dwarf, they may be had in flower 8 in. or 10 in. in height by the autumn; when the growth is nearly complete, half-severe the tops 6 in. below the points, and leave them in that condition for a week, until the base of what is to be the future plant has become callused; then cut through the remaining portion, and put the tops singly in 3-in. pots, drained and nearly filled with good rich sandy soil, and a little sand on the surface; place them in a brisk heat under bell-glasses, shading them and treating them generally, as is done in the case of ordinary cuttings. They will root in a couple of weeks, when they should be gradually exposed to the air of the house; after which they should be moved into 5-in. or 6-in. pots. This process, if they are wanted very dwarf, may even be repeated a second time, but in neither case will the head of inflorescence be so large as when the plants are allowed to flower without the heads being subjected to this manipulation. After the first lot of cuttings have been removed, the old stools will break afresh, when they should be shaken out, placed in pots a couple of inches larger, and grown on. These are the plants to make into bushy specimens, as the shoots can be trained down in autumn close to the pots, if such a form be required. In the warmest parts of England, these stools may be planted out-of-doors in June in a sheltered border in loose open soil, from which they can be lifted in September, and potted without injuring their roots, so as to cause leaf-shedding In this way Poinsettias will flower in a dwarf state. Another nearly allied plant, Euphorbia jacquiniæflora, should now be propagated for winter-flowering. To all who have a stove this is more indispensable as regards flowers in a cut state than the Poinsettia; in propagating this Euphorbia, it is of even greater importance than in the case of the Poinsettia, that the cuttings should be taken off with a heel, for if they are made from the points of the shoots, as is usual in the case of most plants, few will strike root; put the cuttings singly in small pots; they will root in a short time under a bell-glass, if placed in a temperature of 70°; after they are struck, move them into 4-in. pots in good sandy loam, to which add one-sixth of rotten manure, keeping them close to the roof-lights, so as to induce a short bushy habit. Later in the season, when they require it, move them into 7-in. pots. Plumbago rosea, Sericographis Ghiesbreghtii, Eranthemum pulchellum, Justicia carnea, and Thyrsacanthus rutilans should now be propagated without delay, as upon the young plants getting early established in their pots, so as to be strong before autumn, depends the way in which they may be expected to flower during the autumn and winter; for it is not wholly upon their size that their ability to produce abundance of bloom rests, but also upon the growth having time to get matured sufficiently before the flowering season arrives. Out of the immense number of different species of plants that have been introduced to this country, many of which will flower at some time during the winter, amateurs are sorely puzzled what to select and what to reject; but the above may all be relied upon as the best that can be used, possessing the advantage that they will grow in small pots, and are equally adapted for cultivation by those who have a small heated house as by those with unlimited stove room. To the above may be added the exquisitely-scented Jasminum Duchesse d'Orleans; this is a beautiful creamy white double flower, individually as large as an ordinary double Daisy, quite as fragrant and much superior to the old double J. Sambac. Cuttings should now be put in made from the freest young shoots that can be got that have no disposition to flower, as these latter will not root so well; it is a sparely-rooted subject that does not require very much pot room, and it is better to have a number of moderate-sized plants than to attempt to grow large specimens. It will be found to succeed well in good fibrous peat, to which sufficient sand to keep it porous should be added; the plant is somewhat subject to the attacks of red spider, and needs the constant use of the syringe to keep it under. This Jasminum is rather inclined to a thin straggling habit, to correct which the shoots should be stopped occasionally through the summer. For the summer decoration of amateurs' greenhouses, there are few plants more suitable than the tuberous-rooted Begonias. Their brilliant colours and habit of flowering without intermission for several months render them most desirable either for ordinary decorative purposes or for the production of cut flowers, their elegant drooping form particularly befitting them for associating in vases with flowers of more erect growth. If bulbs be now placed in pots filled with ordinary sandy soil mixed with one-sixth of leaf-mould and a little rotten manure from an old hot-bed, they will grow well. Do not put them at first in pots of too large a size, and shift them into others as soon as the first are filled with roots. They do not require strong heat to start them, an intermediate temperature answering better; or they will succeed in a greenhouse altogether, but will not flower so early, and consequently not so long, as when first placed in heat, and afterwards transferred to a cool house or pit. In sheltered warm localities they will thrive well out-of-doors in the summer, being all but hardy, provided their roots are mulched in winter, and planted in a dry situation.

Greenhouse.—The plants here will now require additional water. Azaleas, that have pushed a considerable amount of young shoots (which they will do before the flower-buds begin to swell, if the plants be in good health and strong), will, consequent upon the quantity of young leaves they thus make, need more water. Those who have not had much experience with these plants frequently suppose when growth is made to a considerable extent before flowering, that it will interfere with their blooming; but such is by no means the case, although when the plants in this condition have been allowed to flag from want of water, I have known the undeveloped flowers to be killed in the buds, and the cause attributed to the existence of the young shoots, which in subsequent years were removed as they made their appearance before flowering, to the certain weakening and serious injury of the plants.

Bedding Plants.—Whatever propagation of the more tender subjects that are not generally planted out before June has yet to be done, should be completed as soon as possible, or the season will be too far advanced for the plants to attain their natural size. Attend to the hardening off of all the plants that are to be put out first; but it is not advisable to plant too soon, however fine the weather may be, as the changes are so rapid and often unexpected, that a single night's return of low temperature, even if it does not kill the plants, frequently induces such a stunted condition that weeks elapse before they begin to again grow.

Flower Borders.—Now is a good time to plant the principal collection of Gladioli; if desired, a few may be reserved for putting in later that will bloom after the others. The soil for Gladioli should be of a strong loamy nature, well dug and made moderately rich. I have found a dressing of soot benefit them materially. Do not plant where the ground is full of the roots of shrubs, or still worse, of deciduous trees, for where these exist, it is impossible for the Gladioli to succeed, as they are robbed in two ways—viz., by the soil being impoverished, and the moisture from it being absorbed by the roots of the trees.

Kitchen Garden.—Early crops of Cabbages and Cauliflowers that have been recently planted out have this spring been more than usually knocked about by the late strong winds. When these crops are in this way worked loose at the collar they should at once have the soil drawn up to them, for, if allowed to remain to be rocked about by the wind in all directions, they will not thrive. Where Globe Artichokes are required later in the season than the established beds will continue to bear, suckers should now be taken off from the stools of existing beds. A planting trowel is the best implement for such a purpose. Each sucker should have a few roots attached, and should be planted before it is allowed to flag in a piece of deeply-dug, well-manured ground. Plant them three or four together in clumps, 3 or 4 in. apart, the clumps 3 ft. asunder in the rows, with 4 ft. between the rows; water them well, and place 10-in. or 12-in. flower pots over each lot of suckers for a week or two until they have begun to grow, tilting the pots so as to give light, shading the plants from the sun. Planted now when the suckers have got considerable strength, they will produce a good crop, much superior to that borne by suckers taken off earlier plants, which latter are a long time in acquiring strength, but they must be shaded as above recommended until they have got a firm hold, or they will not succeed nearly so well.

Conservatory.

Creepers, such as Passifloras, Tacsonias, and others of that class that flower on the current year's wood, should now receive their final pruning by cutting the whole of the old shoots completely out, leaving only the main stems and branches. Any young growth that may have started on the old spurs from which the branches were cut away some time back will require thinning and regulating, so as to leave only just sufficient to depend in a loose natural manner. Creepers are often made to assume a stiff formal appearance by too much tying and training: this should be avoided as much as possible, as they never look so well in any way as when drooping gracefully down from the roof without any restraint. Where there is sufficient height in the house to allow creepers to depend from the girders, nothing can equal the beauty of the different varieties of Passifloras, Tacsonias, and Bignonias as decorative plants for furnishing the roof. In such positions, with their main stems tied firmly to the proper supports, the young branches can be allowed to hang down and festoon overhead in the most natural manner, thus clothing that portion of the house with the richest drapery of foliage imaginable. Where roofs of conservatories are furnished with quick-growing plants of that class it is necessary to look them over frequently that they may be kept properly thinned and regulated, or they soon become a tangled mass, and lose much of their natural beauty. With the rapid growth such roof-climbers are now commencing to make, abundant supplies of water at the roots will be necessary, especially where the roots are at all confined and the borders are of limited extent. See that what is given is in sufficient quantity to soak thoroughly the whole of the soil, as the principal roots of established plants like these are sure to be deeply down in the earth, and, therefore, out of reach of moisture unless water be given them in large quantities.

Pillar Plants.—Among these the deliciously fragrant Jasminum gracile should always have a place, as it is so powerfully scented as to fill a whole house with its perfume. It is equally adapted for clothing a wall, or for growing as a roof-climber, except in houses that are high and lofty, in which case it would hardly be strong enough. The leaves are of a most pleasing pale green colour, beautifully glossy and fresh looking, and as it is not at all subject to insects it is admirably adapted for growing in houses attached to mansions or dwellings. Rhynchospermum jasminoides is sure to commend itself for like positions, and is a good companion to the above, to which its blooms have a striking resemblance. Cantua dependens should have plenty of sun and light to ripen its growth. It is one of the grandest of all plants that can be had for a pillar, as there its delicate long pink trumpet-shaped flowers depending so gracefully from the ends of the shoots can be seen to the greatest perfection. This is a plant that is now unfortunately but seldom met with, and yet there are few more beautiful or deserving of cultivation. If planted out in light, dry, sunny positions, it grows and flowers in the freest manner possible, and when laden with bloom is an object of great attraction. Unfortunately, it is rather subject to red spider, but this can be kept down by a free use of the syringe and plenty of cold water.

Baskets well filled are a great ornament to conservatories where the roof is sufficiently light, lofty, and not overcrowded with creepers. There are few better plants for filling these than that fine old Pelargonium, Rollisson's Unique. This displays its beauties to better advantage when suspended in this way than it is capable of doing when grown as a pot-plant, as in the former position it rambles over the sides of the basket, and droops with its load of flowers in a natural manner. A few plants of the common Ivy-leaf worked in with it greatly heighten the effect by the contrast. Achimenes are likewise very suitable for this kind of work; but, to have them in perfection, baskets should be at once filled with some that are started, and then placed in the stove or some other light warm house. Rough peat and old partly-decayed Moss answer admirably for growing them in, and are more retentive of moisture than most other mixtures—a point of some consideration where the air has full play on all sides of the soil. Ferns, too, are very graceful ornaments when placed in well-filled globular baskets; choice should be made of such as are of drooping pendulous habit, such as Asplenium flaccidum, Woodwardia radicans, and others of that class. Plants of Nephrolepis are likewise graceful adjuncts to basket work, as they soon send their creeping roots over the entire surface, and clothe the whole of the basket with their elegant-looking fronds. N. tuberosa and N. exaltata being greenhouse kinds, and very strong growers, make noble masses that are in good condition all the year round, and are possessed of a permanent character. For smaller sizes, N. pectinata is a perfect gem, having fronds from 12 in. to 18 in. long, that are very useful for cutting. During the summer months such grand sorts as N. davallioides may be trusted for a time, the gracefully-arching fronds of which, when suspended, have a most striking effect. Many others, such as Acrophorus immersus, Adiantum setulosum, and others of that class that travel beneath the soil and send out their fronds in various directions, are all suitable for baskets for suspending in sheltered shady positions, where they are sure to be a source of interest and exceedingly ornamental. Fern baskets come in as valuable decorations for winter, when flowers are scarce and the principal beauty of roof-climbers is over. Now is a good time to fill and prepare some by giving them a summer's growth in moist shady houses to get them well established. The baskets should be well lined round with a good thick layer of long Moss, and be then filled with rough lumps of peat and loam. These should be distributed around the sides at equal distances apart, and then have a copious watering to settle the soil amongst them. Fires in the above structures may now be entirely dispensed with for the season, except it may be requisite to dispel the damp should a continuance of wet weather prevail. In cases where Camellias, &c., are planted out so as not to be separately treated from others in bloom, the latter should, as far as possible, be grouped together that the plants may be syringed, to encourage a free growth and prevent insect-pests from establishing themselves on them, which they assuredly will if the atmosphere be at all dry. A moderate degree of shade will now be requisite to plants in bloom, in addition to that afforded them by the creepers, which at no time should be allowed to become sufficiently thick and thus obstruct the light in a way to interfere with the requirements of the flowering plants beneath them. If shade be applied for a few hours during the hottest part of the day it is all that is requisite at this early season, as when it is allowed to remain on long it has an injurious effect on the lasting properties of the flowers, which under such conditions do not assume their natural colours. A very dry state of the atmosphere is alike fatal to a continuance of bloom, as the tax on the plant through the rapid evaporation from its leaves and flowers is greater than the roots can support, and they therefore quickly relieve themselves of the load by shedding their bloom. Syringing among the pots early in the morning and again in the afternoon when the days are bright and sunny will counteract any such tendency, and will likewise assist in maintaining the plants in a healthy vigorous state. Such free-growing subjects as Cytisus, Azaleas, and similar plants now carrying a quantity of bloom, must be liberally supplied with water at the roots, of which they can scarcely have too much if in good health and confined to moderate-sized pots.

Hyacinths.—As these go out of bloom they should be planted out at once in the open borders, unless wanted for spring gardening to form beds, in which case, place some thoroughly decomposed cow-manure, in well-prepared ground, under the roots of each, to assist them in completing their growth, and forming fresh spikes of bloom for next season's display. Solomon's Seal, Dielytra, Lily of the Valley, Spiræa, and similar hardy plants, when turned out of the conservatory should either have the protection of glass for a time, or be placed in some warm, sheltered position where they can be well attended to with water till they ripen off naturally and die down. Plants that have once been forced, if well cared for and grown on afterwards are in a far better position for flowering early again than those that have not been so treated; even the hardy Lilac, that is supposed to stand almost any rough treatment, well repays looking after and growing on when it has served its purpose in the conservatory, or supplied the flower vase with bloom. There are few places, however, where such things can be accommodated with glass room, or have time devoted to them in watering to forward them for future use.—J. Sheppard, *Woolverstone Park.*

Orchids.

If not already done, it is now a good time to go through all Orchids, potting such as may require it, and cleaning and re-arranging others. Many of the Odontoglossums, particularly of the O. crispum class, will be starting into growth, and will be benefited by being placed in fresh material, but do not disturb well-rooted plants which are doing well merely for the sake of potting them; be careful to crock the pots nearly two-thirds of the way up, and place a layer of fresh Sphagnum over the crocks to preserve the drainage in good order. I find that the cool-house Odontoglossums like good fibry peat broken to about the size of hen's eggs (or smaller for small pots), and fresh living Sphagnum Moss; the latter is a matter of importance, for when the Moss does not grow the plant invariably suffers. In other houses plants, the roots of which are in bad condition, should be potted at once. Pot Aerides, Vandas, &c., in Sphagnum; Lælias, Cattleyas, &c., in good fibry peat with a little Sphagnum, and keep them moderately dry for a time after potting. See that shading for all the houses is in proper working order. Look after thrips, scale, &c., as much as possible, for if not kept down now they will be more troublesome by-and-by. I find it best to wash the plants with weak tobacco-water, which, if made with pure tobacco, does not injure them in the least. The temperature for the week should be—warm house, from 65° to 70° by day, and 60° at night; intermediate or Cattleya house, from 60° to 65° by day, and 55° at night; Odontoglossum or cool house, from 55° to 60° by day, and 50° at night. The higher day temperatures are for sunny days. Those who have all their Orchids in one house must treat it as an intermediate house, so disposing of the plants that the cool house varieties are in the coolest places and the warm house ones in the warmest places.—James O'Brien.

Indoor Fruit Department.

Vines.—Grapes produced by Vines in pots will in many instances be fit to cut this month. Where such is the case maintain a drier atmosphere and a freer circulation of air than has hitherto been thought necessary. Suspend by degrees a free use of the watering pot. The increased amount of air will tend to check red spider, but where it is troublesome hand washing, as previously recommended, is the readiest way of stamping it out. Before uprooting the Vines in a house to be re-planted, it is customary to obtain as much fruit from them as possible early in the season, cutting and bottling it when ready. Then remove the Vines and old border, and clean the house. Examine the drainage, and where out of order make it good, drainage being an important item as regards Vine culture. The border should be 3 ft. in depth, and 6 ft. in width will be sufficient the first year. Inside run a turf wall parallel with the house, and in front of this fill in with a good sound mixture of turfy loam, lime *débris*, charcoal, and crushed bones, well enriched with cow manure, filling up the vacant space behind the turf wall with leaves and stable litter, which will lead the roots inwards the first season, and increase their number. The outside border need not be renewed the first year. Vines struck from eyes this season are the best to plant. After they have made 2 ft. of growth plant them out, simply extricating the points of the roots, but allowing the balls to remain entire. After pressing the soil gently all round them, water with tepid water, and cover up with cow manure to prevent evaporation. With good treatment the Vines will become sufficiently strong to carry twelve pounds of Grapes next year without injuring them. Muscats will have got over their setting process; remove all bunches not intended to remain, and commence thinning the berries as soon as they begin to swell. Tie in carefully and neatly when danger of snapping at the neck is over. Maintain good leafage, but prevent over-crowding, retaining main leaves in preference to laterals. Ventilate early and freely in fine weather, taking all due advantage of sun-heat when shutting up, and giving a little front air at dusk. Immediately after thinning give the border a good watering. At this stage mildew generally makes its appearance; where it is likely to be destructive break up the surface of border, and add to it a little fresh dry soil and charcoal, painting the pipes with sulphur and lime. Allow the steaming troughs to become dry, and maintain a brisk healthy atmosphere. Attend to the tying, stopping, and removing of laterals in later houses; remove before they come into bloom all but one bunch on each shoot.

Pines.—Those swelling rapidly should be examined weekly, in order to see if they want water, which ought to be given at a temperature of from 85° to 90°, using guano in moderation at every watering. During cold weather hard forcing is necessary; but its ill effects should be counteracted by keeping the tan-beds and all available surfaces well damped. Only dew overhead on fine afternoons, shutting up early with sun-heat, the night temperature should not fall below 70°, but when cold 65° are better for the plants. Shift young stock on as the pots become full of roots, 11-in. and 12-in. pots being sufficiently large for them. If the sunshine be bright after potting, shade slightly in the middle of the day for a fortnight; the roots will then be getting established in the new compost, and the shading may be removed by degrees.—J. Hunter.

Kitchen Garden.

Another spell of wintry weather has again retarded operations in this department, and work in consequence having been delayed, the most unceasing perseverance will be requisite to bring up arrears. Our climate is such that the longest growing season is by far too short for the full maturation of some kinds of vegetables, and now that the sowing of seeds is so backward, of necessity the growing season must be brief; every means should therefore be used to promote rapid growth amongst such crops as Parsnips, Carrots, and Onions. As soon as the lines of the seedlings can be discerned, if the weather be favourable, run the hoe through them, and repeat the operation at frequent intervals. The ground being then kept open, the heat of the sun acts more quickly and powerfully upon it, to the great benefit of the crops, whilst, by such frequent surface-stirrings, the growth of weeds is prevented. Another means of promoting growth is to thin out all superfluous plants directly they are large enough to handle, which operation prevents a check being given to those that are to remain. In thinning Parsnips, they should not be left closer together than 6 in., Onions 4 in., Carrots (the large varieties) 5 in., the smaller kinds, such as Intermediate, 4 in.; of course, the short kinds, such as French Horn, if sown thinly, need not be thinned, only by being drawn for use. The advantage of sowing all vegetable seeds in drills will thus be seen, viz., the great facility afforded of cleaning and thinning them during their growth; and one would imagine that such advantages would be apparent to all, and induce them to adopt the plan rather than sowing broadcast; yet it is astonishing with what persistency some people cling to old customs, not taking into account the drawbacks such customs frequently entail. However, at the present day, a spirit of inquiry is abroad amongst gardeners and amateurs, and though, as a rule, all are prepared to reciprocate each other's ideas, yet, happily a spirit of independence exists, and each one has sufficient daring to think for himself, let "custom say what it likes." The first batch of Peas will be fast advancing to the flowering stage, and Peas may be gathered a few days earlier by pinching out the points of the haulm—a process we would not recommend, except when earliness is of paramount consideration. Earth up and stake successional sowings; the plants should always be staked as soon as they are 3 or 4 in. high—first, because less injury is caused to the roots by an early insertion of them; and, secondly, if the Peas once get out of the perpendicular, it is difficult to induce them to take kindly to the stakes. None of the varieties are germinating successfully this season; quite a third of ours have rotted in the ground, and, therefore, future sowings will be sown much thicker. The weather last autumn was very unfavourable for the Pea harvest, as also for most other kinds of seeds; hence the seedsman should be held harmless of blame should this season's growth of Peas be somewhat indifferent. A good breadth of French Beans should now be sown; for this early sowing a warm southern aspect should be selected, and the soil should be deep and well enriched with thoroughly decayed manure. The drills should not be less than 2 ft. asunder, sowing the Beans thinly, and when they are 2 in. or 3 in. high, thin them out to 6 in. apart in the row. In cold localities and situations, it is better not to risk the loss of the crop through frost by sowing too early; under such circumstances it is best to sow in shallow boxes, and grow under the protection of glass, transplanting them to the open ground as soon as danger from frost is past. The transplantation is always successful if the soil in which they are sown be composed of leaf or vegetable mould, as a profusion of roots is always made, and when lifted this kind of soil adheres well to them. If Cauliflower plants that were wintered under hand-lights manifest the slightest tendency to "button," pull them up forthwith, and, as a preventive to the remainder, give them a watering with liquid manure; this will have a tendency to excite growth, and probably hinder any further premature flowering. It is time that all the autumn-sown plants were out; and a small quantity of those sown in heat in February may also now be planted out. Sow Veitch's Autumn Giant Cauliflower for succession; we never sow any other kind after this date. With us Brussels Sprouts are a most important crop, and as we always aim at having them at least 4 ft. high in the stems, they are already planted out, and to those who have never attempted such early culture we strongly recommend a trial; they are planted in deep drills 2 ft. 6 in. apart, on land that has been deeply trenched, and the Sprouts obtained are more like small Coleworts than ordinary Brussels Sprouts. Other kinds of Cabbages, particularly Coleworts, may now be planted if ground can be had for the purpose. Many other kinds of seeds may be sown, and plants placed out for succession, to name which would be but a repetition of former notes.—W. Wildsmith, *Heckfield.*

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

April 19th.

At this meeting the principal subjects of interest consisted of a well-bloomed collection of pot Roses from Messrs. W. Paul & Son, of Waltham Cross, and effective groups of new and rare plants from Messrs. Veitch & Sons and Mr. B. S. Williams. Attention was directed to some interesting experiments in Potato-grafting, which had been carried out by Mr. W. Maule, of Bristol, in order to counteract, if possible, the ravages of the Potato disease. In one of these experiments, which was illustrated by a photograph, a small piece of a Potato-stem had been grafted on a plant of the common Bitter Sweet (Solanum Dulcamara), the result being that the scion grew, and that tubers closely resembling Potatoes were produced from the roots of the Bitter Sweet stock. It thus seems possible to obtain graft hybrids, as has been previously asserted by Mr. Fenn and other Potato-growers, the result in this case being analogous to that of Cytisus purpurascens, which is said to have been originated by grafting C. purpureus on the Laburnum, the characteristic colours of the two parent plants being frequently blended in the same cluster produced by the offspring.

First-class Certificates.—These were awarded to the following new and rare plants:—

Pelargonium zonale var. Vanessa (W. Paul).—A robust and beautiful kind, having dark-zoned foliage and stout trusses of well-formed vivid orange-scarlet flowers, on which is a delicate flush of lilac. The individual flowers are large and of great substance, making it a welcome addition to kinds suitable alike for pot and out-door culture.

Phyllanthus roseus pictus (Veitch).—A graceful slender-branching shrub, with the habit of a Snowberry; its leaves, which are oval, are of a dead green colour, blotched and splashed with creamy-white and rose, the youngest leaflets being of a dull vermilion tint; it is a handsome ornamental-foliaged stove shrub.

Auricula Bessie Ray (Turner).—An effective profuse-flowering Alpine, having a pure and conspicuous yellow paste, surrounded by a velvet-like crimson body colour.

Auricula Alexander Meiklejohn (Douglas).—This is one of the best of the grey-edged class. It has a well-formed, clear, yellow eye, paste-white and very dense, and the ground colour nearly black. Its truss, which is compact, is borne well above the leaves, and altogether it is a most desirable variety.

Auricula Slough Rival (Turner).—A strong-growing Alpine, having bright green leaves and large trusses of velvety flowers; paste ample, and of a soft yellow colour, the outer edge being of a deep velvety-purple margined with puse or blue. It is in the way of A. conspicua, and well deserves culture.

Croton Macafeeanum (Veitch).—A robust and effective variety, having broadly-oblong deep green leaves irregularly blotched with golden-yellow. It somewhat resembles C. Hookeri, but is much more effective, being one of the largest-leaved forms in the whole genus.

Miscellaneous Subjects.—Messrs. Veitch contributed a choice group of new and rare plants, among which we remarked a superb variety of Dendrobium densiflorum, bearing one of the most perfect spikes we have ever seen on a plant of this kind. In the same group was an example of the new Phalænopsis Mannii bearing a seven-flowered spike, and several choice and effective new Crotons, the best of which were C. Disraeli, with halberd-shaped or trilobed leaves; C. Mooreanum, and C. Macafeeanum, a kind to which a first-class certificate was awarded. A hardy bulbous plant named Chlidanthus fragrans, a native of Buenos Ayres, was also shown by Messrs. Veitch. It had yellow Hemerocallis-like flowers, and bright green grassy foliage, and was deliciously fragrant. A very beautiful Calanthe, named C. vestita ignea oculata, came from Sir Trevor Lawrence's collection, the spike being nearly 4 ft. in length and furnished with twenty-two flowers, rather larger than those of the typical C. vestita, and of a creamy white colour with a vivid orange eye. Mr. Roberts, gardener to Mr. W. Terry, of Peterborough House, Fulham, sent two well-flowered plants of Dendrobium chrysotoxum, each bearing ten or twelve spikes of golden yellow orange-lipped flowers. Mr. B. S. Williams furnished an effective group of new Ferns, succulent, and flowering plants, all in excellent condition. Sir G. Macleay sent from Rome two examples of the Bee Orchis in flower. Mr. Parker, of Tooting, contributed a basketful of the double variety of Primula acaulis umbellifera, a kind with lilac flowers, also cut blooms of Rhododendron magniflorum, a kind which has large pure white flowers delicately scented. Mr. R. Dean furnished a plant and also cut flowers of the old double-yellow sweet-scented Auricula, besides a group of white, lilac, and magenta forms of Primula cortusoides. Mr. Croucher, gardener to Mr. Peacock, sent a graceful little specimen of the old Xylophylla falcata, about 18 in. in height, nearly every glossy green leaf of which was fringed with pale reddish flowers; the terminal leaflets (phyllodia) of this Xylophylla are much longer and more slender than the lateral ones, thus giving a pendent look to the plant, which for stove or dinner-table decoration deserves attention. Mr. Ollerhead, gardener to Sir H. Peek, Bart., Wimbledon House, showed a fine variety of Dendrobium lituiflorum, bearing twenty large richly-coloured flowers on a long slender pseudo-bulb. This plant has been exhibited at one or two previous meetings, and apart from its beauty and floriferous habit, its flowers last much longer than those of most other Dendrobes. From the same exhibitor also came a well-bloomed plant of the old D. densiflorum, a small plant of Masdevallia Veitchii, and an example of the long-tailed Lady's Slipper. Messrs. William Paul & Son sent, as has been already stated, a large and effective group of choice pot Roses, remarkably well flowered. Among them we noticed Therese Loth, a soft, rosy Tea-scented variety, with smooth shell-like petals, delicately incurved; Captain Christy, Madame Rothschild, and many others. Among the Tea-scented varieties we remarked the old Souvenir d'un Ami, Madame Willermoz, Madame Margottin, and others, all valuable kinds for furnishing early cut flowers. The Hon. and Rev. T. Boscawen showed a very effective group of cut Rhododendron blooms, among which were two new seedlings of considerable merit, a white one named Meme, and a delicate rosy one, named Rose of Lamorran, both fine kinds. An attractive collection of Camellia blooms, cut from plants growing in the open air, was furnished by Mr. John Allen, gardener to Viscount Falmouth, at Tregothnan, in Cornwall. Mr. Allen, gardener to Sir R. Sheffield, Normandy Park, Brigg, sent four plants of a new broadly-acuminate-leaved Iresine, named I. Alleni. It appears to be of robust habit, and may be of service in bedding arrangements.

Fruit and Vegetables.—Mr. Sidney Ford, of Leonards Lee, Horsham, showed a select collection of Apples in admirable condition, the varieties being Petworth Nonpareil, Pronge's Pippin—a local name for a small rosy fruit of excellent quality—Pine-apple Pippin, a large finely-shaped fruit; Poor Man's Profit, an excellent culinary kind in the way of the better known Dumelow's seedlings, or Wellington, New Rock Pippin, and Reinette Grise. The same exhibitor also sent two brace of Masters' Prolific Cucumber, a handsome dark-green kind of excellent flavour. Mr. John Pottle, The Gardens, Sudbourne Hall, Wickham Market, showed six specimens of a new Cabbage Broccoli, a pale-leaved form of hearting Cabbage, having a small head of Broccoli inside. It was suggested that it may have been the result of a cross between the Broccoli and the Cabbage, being exactly intermediate between both of these esculents.

NOTES AND QUESTIONS—VARIOUS.

Hardy Spring Flowers.—You have not named among these the variegated Symphytum. I think it one of the very best of plants for a spring border; not for its flowers, but its leaves. It is a very striking plant at all times, but it is especially handsome in spring, when the leaves are small and the whole plant compact.—H. N. Ellacombe, *Bitton Vicarage.*

Heating by Candles.—In some of the late fruit houses at Gunnersbury, where there is no heating apparatus, candles are employed to keep the houses from getting too low in temperature in very severe nights in spring. The candles are inserted in pots of sand three in each pot. A single line of the pots placed in a narrow Peach house at intervals of a few feet suffices to raise the temperature 4° in a few hours.—V.

Camellias out-of-Doors.—There is a common idea that it is almost useless to attempt the growth of Camellias out-of-doors; that they will live, but not flower. Last year I planted out two small plants, one against an east wall, the other against a north wall. They were planted out in May, and formed flower-buds in the usual way. The plant against the east wall shed its buds in January; but that against the north wall has flowered satisfactorily. This may give a hint to others.—H. N. Ellacombe, *Bitton Vicarage.*

Rooks and Rookeries.—After many years of vacillation and uncertainty, the rooks daily feeding and hovering about the trees surrounding my house have at last built and hatched. They commenced building one or two nests in the autumn, which were soon destroyed; early in March they again built three nests, one of which was blown down, and soon rebuilt. I have noticed in a number of new rookeries in this neighbourhood that they always commence with three nests, and when rookeries extend to outlying trees, the new colony consists of the same number. Can any of your readers tell me whether this is invariably the case?—George Maw, *Benthall Hall, Broseley.*

Another Effort.—By an arrangement with Her Majesty's Commissioners the sum of £5000 has been made over to the Royal Horticultural Society on the security of the Commissioners, and by the end of this week every debt owing by the Society on the 31st December last will be paid, including prizes, medals, and tradesmen's bills of every kind. The recent proposal to teach horticulture practically to amateurs and others has, we hear, been abandoned.

A Green Currant.—The Currant seen by "P." (see p. 360) in a garden in Norway, may perhaps be found in England. I recollect seeeing it in a nursery in Lancashire forty years ago, where it was known as the White-fruited Black Currant. If it be a species, it must be very little known, as I never heard of it afterwards.—Thos. Williams, *Ormskirk.*

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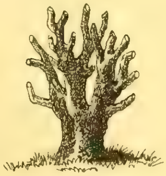
"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NOTES ON PRUNING CERTAIN EVERGREENS.

By JAMES M'NAB, Royal Botanical Garden, Edinburgh.

EVERGREENS are a class of plants the cultivation of which cannot be too generally adopted or recommended, and perhaps no temperate country is better suited for their culture than Britain. There are, however, certain peculiarities attending the cultivation of some evergreen shrubs which ought to be more generally known than they are. In newly laid-out places Evergreens are mostly mixed up with deciduous trees. At first all go on well together; in time, however, the trees, from want of proper and timely pruning, become close, and the Evergreens, deprived of the requisite amount of air, get drawn up, and many of them finally succumb. In such situations, if the deciduous trees be carefully thinned and pruned, and fresh soil occasionally laid over the roots of the Evergreens, they will go on annually improving—that is, if air have free admission, and attention be paid to the surface-dressing just alluded to. It is often observed how well some Evergreens thrive when in close proximity to the stems and roots of deciduous trees; some with which I am acquainted have grown on together for fifty or sixty years without any very bad effects being produced, which would not have been the case if air and occasional surfacing had not been attended to. If young Evergreens be planted on ground already occupied by deciduous trees, even although large pits are prepared for them, the roots of the existing trees will soon find their way into the newly turned up earth, to the ultimate injury of the Evergreens placed there. Annual branch, or rather twig, pruning has a wonderful effect at times in protecting large evergreen shrubs, whether exposed or in close proximity to trees. The branches of many kinds here are operated on annually to keep them within bounds, such as Evergreen Oaks, Portugal and Common Laurels, Sweet Bays, Hollies, and others. Such shrubs regularly pruned into a hemispherical shape with the knife, withstood the severe winter of 1860-61, while many unpruned specimens of the same kinds standing close beside them were either totally or partially destroyed. The saving of the pruned shrubs I attributed to the density of the surface twigs and foliage retaining the weight of snow which lay heavily upon them, when the thermometer fell several degrees below zero, and snow was on the ground nearly 2 ft. in depth. During this time many unpruned specimens were killed down to the snow-line, the branches, and in many cases the exposed parts of the stem, being split up with the frost, and the stems in many instances had to be cut down to within 3 ft. or 4 ft. of the ground, giving them something of the shape of the annexed figure. After being cut, the surface of the ground, extending as far as the original branches, was covered with a good coating of leaf-mould, &c. Many of the shrubs thus operated on during the spring of 1861 are now finely-formed specimens, and owing to the annual twig-pruning to which many of them are subjected, they may go on uninjured for many years to come. Portugal Laurels, cut down either from the effects of frost or from being large and rampant, may after a year or two be transplanted with success, which would rarely be the case if transplanted unpruned, unless great care and much expense were incurred in the operation. I have seen stumps of mutilated Portugal Laurels thirty and forty years old removed with safety; many of these are now thriving, shapely plants, and for this end care should be taken to give them a good outline when they are being cut down. The success, too, attending the removal of such large masses is greatly facilitated by having their roots cut round when the tops are shortened. When a new shrubbery is in course of formation the introduction of a few of these cut down stumps into it gives the place an aged appearance, and the growth of such plants is greatly increased by having the ground trenched before they are planted. During the severe winter just alluded to instances came under my observation which do not exactly agree with the foregoing remarks. They have reference to three injured hedges, and the circumstances attending their injury ought to be recorded. One, consisting of Holly, was about thirty-two years of age, 60 yards long, and 7 ft. high. This was annually clipped, but was growing in rather a damp situation. It was killed down to the snow-line, while of eight of the leaders left in this hedge, and standing at regular distances apart with large conical tops about 12 ft. high each, not one suffered. The hedge in question, with the exception of the turrets or leaders, was afterwards cut down to within 18 in. of the ground, and after being well "breasted" in on both sides, and the ground surfaced over with good soil, it is now as tall and as good as ever it was, and is still furnished with its original turrets or leaders. How the frost affected the main portion and not the elevated leaders remains a mystery. A Portugal Laurel hedge, upwards of fifty years old, although annually clipped, and growing in a damp subsoil, also suffered severely during 1860-61. It was cut down to within 30 in. of the ground, and breasted on both sides, the surface being afterwards coated with good soil. This hedge grew freely, and is now perfectly good. A portion of this Portugal Laurel hedge was transplanted when covered with young growths, about three years after being cut down. The portion removed is now as dense and as healthy as the portion not lifted, notwithstanding that the roots were not cut, as recommended for Portugal Laurels standing singly. Another case was that of a Holly hedge, about 200 yards in length, standing in a dry situation along the north side of a high boundary wall; this hedge, which averaged 10 ft. in height, had not been clipped for many years, and it suffered severely during the winter of 1860-61. After, however, being well cut down and breasted in, and otherwise treated like the others, it is now growing freely, while a Holly hedge 160 yards long, running parallel with and standing within 60 ft. of the one killed, but with a full southern exposure, was not injured in the least, although 10 ft. high. The wood of the former, from having a northern aspect, and quite out of the reach of the sun, was not sufficiently ripened to stand the severe frost which was experienced at the time. During the severe winter of 1860-61, many Deodars were injured in the Botanic Garden, those which escaped unhurt being the "branch-pointed" specimens, the cutting off the points of the branches, like the Portugal Laurels already alluded to preventing their being bent down with snow, of which there was at the time a heavy fall; while almost all the unpruned specimens, with the exception of one growing in a damp situation, were more or less cut to the ground, and several were killed outright. The pruning of the Deodar, as well as of many other Coniferous trees, has not in every instance been attended with success; but failure in all the cases investigated has resulted almost entirely from the neglect to put some covering compost over the surface of the ground, extending from the stem to the extreme points of the roots, so as to prevent the sun shining on the surface-roots during summer, or frost reaching them in winter. It seems to make little difference at what season of the year the branches of Deodars are pruned. I have performed the operation at all times without their sustaining any injury, some being cut pretty close to the main stem, so as to give them a conical shape. This form in the case of Deodars is not, however, always to be recommended, although in some instances it is required and even practised, particularly in some of our suburban cemeteries, where such plants often spread over a considerable extent of surface, and often over places which they are not intended to occupy. If damage be sustained by the cutting of such plants, the operators have themselves to blame through not attending to the instructions which have been given on the subject. There are many people who maintain that Deodars and other Coniferous shrubs should not be pruned. In many cases, however, and one of these I have just mentioned, pruning is absolutely necessary; and I may say that I have never yet seen a Deodar injured



Laurel cut back.

in a high and dry situation by a free use of the knife, provided proper attention has been paid to it after it was operated upon.

ORCHIDS—BASKETS *v.* POTS.

The ordinary flower-pot so generally in use for Orchid culture is by no means all that could be desired for that purpose; it seems unreasonable to put epiphytal Orchids—which grow naturally on the branches of trees, and have roots requiring almost as much air as the leaves and stems themselves—into pots so constructed as to exclude all air from the roots, except the small quantity that can reach them from the top and the bottom of the pot. It is from this cause that many Orchids are found so difficult to rear successfully in pots, not so much during the growing season, for at that time the roots are young, and capable of imbibing the moisture; but when the plants are at rest, the roots should also be at rest; consequently, those grown in pots are more liable to be affected by any oversight or mismanagement, such as too much heat, too much water, or getting under drip; and many Orchids capable of retaining their roots in a healthy condition for years if grown in baskets, on rafts, or on blocks, are annually lost when grown in pots. My conviction that epiphytal, and even terrestrial, Orchids are more safely cultivated in baskets or on blocks than in pots was amply confirmed in the following instance, which came under my personal notice last year:—A gentleman in the neighbourhood of London commenced the culture of Orchids in the only available house he had, a small ornamental conservatory adjoining the drawing-room; he purchased from time to time such Orchids as he fancied without any reference to their being hot or cool house varieties; the plants in baskets or on blocks were suspended from the roof, and those in pots were placed on the stage round the house. We frequently had conversations about Orchids, in the course of one of which he complained that his plants in pots did not thrive well. I then informed him that I always considered such subjects to be much safer in baskets than in pots, mentioning cork as a good material of which to make the baskets. About three months after I paid him another visit, and was surprised to find nearly all the Orchids (terrestrial and epiphytal) either in cork baskets or on blocks, suspended from the roof and all in the best possible condition. It was curious to see the old Phajus grandifolius in full bloom and several of the Cypripediums also in flower in baskets, two or three fine plants of Zygopetalum crinitum on blocks, Odontoglossum Roezli in flower, O. Alexandræ, O. Pescatorei, and O. triumphans; Calanthe veratrifolia, Maxillaria venusta, most of the rarer Dendrobes, and many others, all in baskets or on blocks. I afterwards had the pleasure of seeing many of them in flower, and always found them in good health. I do not attribute the total success of their healthy development to the fact of the Orchids having been placed in baskets, for they might have succeeded tolerably well if planted in ordinary pots and suspended in the same way as the baskets, but I feel confident that if they had been left on the stage they would have entirely failed, while the appearance of the hanging baskets added materially to the decorative beauty of the conservatory. Some object to baskets because they are liable to rot, and others say that, although the plants do well in them, when one wants to shift them into those of a larger size, the roots are so interlaced in the old baskets as to render it difficult to remove them without serious injury. With respect to the first objection, imperfect ventilation has often been found to be the cause of the baskets rotting, but it is important to have them made of durable wood, such as Teak or Oak, and when so constructed they last a considerable time. There is also a very good kind of Orchid basket made of terra-cotta, which, although rather heavy, answers the purpose admirably. In shifting the plants no difficulty will be found if the wires of the old basket be drawn out and removed a piece at a time, making use of a thin-bladed knife to remove the clinging roots. The great argument in favour of baskets, rafts, or blocks is, that while there are a great many epiphytal Orchids that really will not grow in pots for any length of time, all succeed if grown in baskets; therefore those having plants not thriving in pots should turn them out, wash the roots, and place them in baskets.

In favour of the flower-pot, which it is not desirable to dispense with altogether, we may urge that it is cheap and durable, it is to be obtained either in town or country in quantity, and it does not harbour insects; it is also necessary for such terrestrial Orchids as Cypripediums, Calanthes, Phajus, &c., which we shall deal with shortly, and a great number of the stronger-growing epiphytes will do well in pots if the following instructions be attended to:—In the first place, see that the pots intended to receive the plants are clean, then have them crocked to within one-third of the top (except in case of such plants having long roots, as the Vandas, &c., when the lower roots must be put in first and the crocks afterwards), after which place a layer of Sphagnum Moss on the top of the crocks to keep the drainage open. Good fibry peat without soil is the best preservative for the roots, and this may be used by itself for Cattleyas, Lælias, and most Oncidiums, and with the addition of fresh Sphagnum Moss for Odontoglossums, Masdevallias, &c.; always have the peat broken with the hand, and in using it take the large and small pieces for the large and small pots respectively, being careful not to press it in too tightly, so as to impede the action of the air and the free passage of water. But the most important matter is to keep the plants well above the rims of the pots, so that when the plants send forth new roots, they may not be forced to descend into the pot, but may spread themselves over the surface or just below it, and thus receive the benefit of the air so necessary to their proper development. The stages, if not of trellis-work, should be covered with coarse shell-gravel, or some similar material to allow of the free passage of water through the pots; and if the stage be flat, all but the front row of plants should be arranged on inverted pots. It is also desirable to move the plants frequently, and have the pots washed, as if they be allowed to get very green, they will deteriorate the air of the house. By attending to these instructions, and by carefully regulating the heat and air, epiphytal Orchids may be grown in pots with every probability of success.

James O'Brien.

GROWING CALCEOLARIAS FOR SEED.

Plants intended to bear seed should be grown without check from first to last; and if be is a question of gathering as much seed as possible from them, they should be grown for that purpose alone, and not employed for general decorative purposes, nor be pushed into flower before their natural season, which, in the case of the Calceolaria, is May and June. Though these instructions will be serviceable to people who have plants coming into flower this season, we must begin at the beginning in giving the general routine of culture. Sow the seeds in the first or second week in August, in a shallow pan of very fine light soil; barely cover them out of sight, put a pane of glass on the pan and place it in a cold pit within 6 in. of the glass, taking care it is set perfectly level, and keep the soil uniformly moist till the seedlings are fairly up. Then remove the pane of glass and attend more particularly to watering; do not keep the soil sour and claggy, but never let it get dry. When the plants are fit to handle with the finger and thumb prick them off 1 in. apart in properly-drained pans or boxes 4 in. deep, using a compost of peat or leaf-mould and loam put through a half-inch sieve and plenty of river or silver sand. Restore them again to the cold pit or put them in a cold greenhouse where the temperature is never below 40° or above 50° in winter; keep them away from hot pipes, water regularly as before, and keep them close to the light. By midwinter they will be getting crowded, and must be boxed off again, for growing them on in boxes as long as possible is half the secret of success. This time lift them with good little balls to their roots, and plant them 2 in. or more asunder, using the same kind of compost as before, with a little well-rotted cow or decayed hotbed manure, all sifted and made fine and workable. This shift will serve them till February, and if they be only attended to in the way of watering and not forced by fire-heat, they will be broad, dwarf, and vigorous, showing no disposition to flower prematurely, and will be free from green fly. I never had occasion to fumigate them, at least up to this stage, and seldom at any other time. This last shift, which should be given before the middle of February, will be the final one. Prepare the requisite number of 9-in. and 10-in. pots by cleaning and crocking them carefully; then get ready a compost the same as before, only not sifted, but chopped as finely as possible with the spade and well separated, not forgetting the rotten manure and the sand. Lift the plants out of the boxes with good balls—an easy matter—and transfer the weaker-looking ones to the 9-in. and the stronger ones to the 10-in. pots, filling in carefully so as not to injure the broad and tender leaves; pot rather loosely, trusting to settling the soil well about the roots by a thump on the bench and a shake rather than ramming, and leave half an inch at least for water. If any plants show a flower-stem, pinch it close out. Set the plants closely together to prevent evaporation from the sides of the pots in a light span-roofed-house or lean-to greenhouse, and as near to the glass as possible. From this time the plants, being in pots, need more care, everything depending on copious but careful waterings, abundance of light and air, and coolness: avoid fire-heat as much as possible. As spring advances the plants will rapidly increase in size, and by April they will be throwing up their flowers, and will need staking. The simplest plan is just to put three or four sticks round the pot and run a piece of matting round them. If saving as much seed as possible be the object, keep all the plants; but if selection be aimed at, then save only those which combine a dwarf, stocky habit, with large, full, well-coloured flowers. Having made your selection, give the plants what room is required, to prevent crowding, but no more. Keep the house cool and airy night and day, and sprinkle plenty of water among the pots and on the floor in sunny weather. Have a small camel's hair brush, and when the flowers begin to open just touch the stamens and stigma slightly in order to fertilise them, and continue this operation at least two or three times a week about noon, till the last flowers are out. This use of the brush does not take much time, as a boy can go over hundreds of plants in an hour, and it greatly helps the setting process—in fact, it is essential to ensure a good harvest. The seed-pods soon begin to fill and get plump, and shortly after the first flowers are set it is necessary to look over the plants daily and pick off all the pods which are observed to be changing to a brown colour, otherwise they will burst and the seed will be lost. Gather the seed on a flat tray, and leave it in a quiet corner of the house to dry, but take care that it is not blown away by the wind. When all is gathered and dried, rub it through a fine sieve to clear it of husks, and afterwards shake the seed out on a sheet of paper, blow the dust out of it, store it in packets, and keep it dry. Calceolaria seed is exceedingly minute, and it takes a large quantity of it to make an ounce, but I have saved it at the rate of about an ounce to fifty plants, under not very favourable circumstances.

Chef.

BULB-BEDS CARPETED WITH SAXIFRAGES.

Mr. Ware's plan of planting bulbs among Mossy Saxifrages I have strenuously advocated for some years, and practised it myself. It is only a modification of the system of planting Snowdrops, Crocuses, and Daffodils on lawns in grass, and whoever may have seen Hyacinths in an ordinary bed and in one mossed over with Saxifrages would at once be struck with the beauty of the latter as compared with the former. There is generally a paucity of foliage in connection with our choice early bulbs, and it seems a pity to see such beautiful blossoms resting on the bare earth; neither do the colours of these early flowers appear to advantage when lying on the ground, but they are beautifully set off by a carpet of Saxifrage. The charming early Iris reticulata appears more benefited by such treatment than any other early bulb with which I am acquainted, owing to its very sparse foliage. I have seen beds of choice early bulbs covered over with Moss; but what is dead Moss compared with living verdure? I grow, I think, above fifty of the Mossy Saxifrages, and have somewhere pointed out their utility as winter plants for filling up beds otherwise bare, for which purpose they are simply charming, varying as they do from the emerald green of S. virescens to the pea-green of many of the others. Some judgment and a knowledge of Saxifrages are requisite in order to properly adapt the carpet to the bulbs. Scilla præcox, or sibirica, would appear smothered among such Saxifrages as hypnoides or incurvata; but it would appear as if lying on green velvet on such kinds as S. densa or groenlandica, the latter being almost as flat as a Lichen, while stronger-growing kinds should be employed for such plants as Tulips and Hyacinths after the early bulbs are over. These fresh green beds, too, are no mean objects in summer, especially when edged with the silvery or encrusted kinds of Saxifrages, such as pectinata or rosularis. Thos. Williams.

Bath Lodge, Ormskirk.

Transplanting Wild Flowers.—Allow me to inform "L. L. C." (see p. 380), that I do not think it is the wisest plan to transplant even wild flowers when in bloom, unless a good portion of the soil, Grass, &c., be removed with them, so as not to interfere much with their roots. If a check be given during the blooming period, the plants would very likely not recover before another season. Last May I cut with my pocket-knife from a pasture, with the Grass and soil surrounding it, a root of the common Speedwell (Veronica officinalis) just breaking into bloom. I folded the clump in Dock leaves, and in an hour or two planted it at the base of my Alpine rockery. It went on growing and blooming, seeming not to have suffered at all. I eventually cleared it of the Grass and weeds, and it is now about 1 ft. square, and will soon be a mass of bloom.—P. F. Lee.

Calla æthiopica for Church Decoration.—Few plants are better adapted for church decoration than this, especially at Easter, when white flowers are so much in demand. We have lately used it with excellent effect as a background to White Spiræas, Deutzias, Hyacinths, and Primulas, edged with Pteris serrulata. The trumpet-shaped flowers and fine foliage of the Calla contrast admirably with such plants as those just named, and near the font or springing from a cool bed of Ferns, Callas are the best plants that can be used. When cut, too, their spathes are very effective where bold and striking combinations are necessary. For altar decoration we used the largest Calla blooms, supported by a background of scarlet Pelargoniums and Fern leaves, and the effect was equally satisfactory both during the daytime and under artificial light.—Jas. Groom *Henham.*

Coltsfoot Pushing through Asphalte.—About four or five years ago the platforms at our station here (Mitcham Junction) were laid down with a thick coating of asphalte. Nevertheless, such is the force of growth and endurance existing in the roots of the Coltsfoot (Tussilago Farfara) that every year it forces its way through the asphalte, despite the hardness of that material. The asphalte is pushed up into little hillocks, which gradually crack; very soon the young leaves make their appearance, and afterwerds the whole plant. The common Thistle I have also noticed doing the same. Let any one take a cake of asphalte and try to push a stick through it; he will then be able to realise how great must be the vital force exerted by the plant-roots in question, which, by adding particle after particle to their structure, are enabled to upheave and displace such a hard compact material as asphalte.—Henry A. Wood, *Willow Lodge, Mitcham.*

Pinks Suitable for Forcing.—Not many years ago there were but a few varieties of Pinks that could be successfully forced into bloom in February or early in March, and these exceptional varieties consisted of one or two white-flowered kinds and the well-known Anna Boleyn Pink, the latter being a large showy highly fragrant kind, but having the serious defect of almost invariably bursting its pod. Mr. Dalton, of Bury St. Edmunds, an enthusiastic amateur florist, therefore resolved, if possible, to raise a Pink that would force without this defect; and he succeeded several years since in originating a highly-perfumed variety, with flowers of the same colour though somewhat smaller than those of Anna Boleyn, but possessing the advantage of a well-formed pod of such consistency as to put bursting out of the question. This was soon followed by a greatly improved variety, named Plato, both sorts being well adapted for forcing. Mr. Clarke, too, another Bury St. Edmunds amateur florist, succeeded in originating several useful varieties, the best of which have been named Garibaldi, Derby Day, and Lord Lyons. The last is quite a gem in its way, and one now well known and extensively grown; and the Floral Committee of the Royal Horticultural Society very properly bestowed upon it a first-class certificate some twelve months ago. From the same source we have also yet another superb variety, named Duchess, a kind which is in all respects a fitting companion for Lord Lyons. The flowers of this new sort are exceedingly fragrant, and their colour a delicate lilac-pink, with a darker blotch in the centre. Its petals are finely rounded; the individual blooms are large and full, and the pods are exceedingly strong and not at all likely to burst. This Pink is of vigorous habit, and is one which appears to be a profuse bloomer, and easily forced into flower.—P. Grieve, *Culford Hall.*

NOTES OF THE WEEK.

—— Many of the Lilac bushes now look so weak in their too numerous branchlets that one cannot help thinking that the Continental practice of pruning the Lilac, so as to ensure strong flowering shoots, would often be desirable here. In French public gardens the Lilac is regularly pruned, *i.e.*, so thinned that strong flowering shoots take the place of the weak straggling crowd of branchlets.

—— A singular effect is now to be seen wherever strong and established tufts of the Giant Knotweed (Polygonum cuspidatum) are coming up. The great spotted shoots rush up in crowds to the height of a yard before breaking into leaf or branchlet. These were said to be edible, forming one of the many so-called substitutes for Asparagus. If of any use as an edible, what an immense yield might be looked for!

—— Without doubt the various kinds of Daffodils now in cultivation are the most valuable of all hardy flowers for our climate. No other flowers have withstood the snow, sleet, rains, high winds, and frosts as these have done. Some of the finest kinds seem, indeed, to take no notice of the weather, be it what it may. For weeks now gardens where these plants are fairly represented have been full of their beauty, and so they yet remain.

—— Brugmansia sanguinea, planted out in a greenhouse at Kew, is now in great beauty. It is 6 or 7 ft. high, and perhaps 10 ft. or more in diameter, and literally loaded with orange-red tubular flowers. We have seen this Brugmansia in the conservatory at Hatfield in equally good condition. Though a large-growing plant, no one need be afraid to plant it even in comparatively small houses, as it is rather improved than otherwise by being occasionally well cut back.

—— A Botanic Garden about twenty acres in extent has just been opened at Southport. In connection with it a museum has been erected containing collections in the various branches of natural history, the entomology of the neighbourhood being well represented. Geology has a department assigned to it, and the whole of the collections have been well arranged and classified.

—— Mr. Turner has sent us some of the Cox's Orange Pippin Apples alluded to last week. They were, when they arrived (on April 21st), perfect in colour, flavour, and texture, and without a wrinkle; Ribstons, sent at the same time, were much shrivelled. They were both kept in a wine cellar, each fruit being wrapped in a bit of tissue paper. As we before remarked, the common notion of what a fruit-room probably ought to be is a mistake. Fruit-rooms, as generally made, are not suited for the long-keeping of late fruits. A good cellar under the garden-house or office will prove a great improvement on the ordinary fruit-room for the keeping of the finer kinds of fruits.

—— Over 4,500,000 tons weight (about 1000 million gallons) of rain fell over Paris in twenty-nine days during the recent floods, and an examination of samples led to the estimate that nearly 9 tons of ammonia were washed down with it, containing sufficient nitrogen for a forest that would cover the whole of Paris. The question has often been raised whence plants get their nitrogen, and the above figures help to explain it. The rain was also estimated to contain about 88 tons of mineral substances, amongst them being globules of iron of meteoric origin.

—— Among hardy shrubs now in bloom, Magnolias of the M. conspicua type are now very beautiful in many London gardens, and the best forms of them deserve to be planted more extensively than they are. The orange-flowered Berberis Darwinii is also very effective both isolated and in masses at Kew, and in the Exotic Nursery at Tooting; one of the most beautiful of all spring-flowering trees is the Pyrus Malus floribundus, which is now one mass of delicate-rosy flowers and carmine-tipped buds. Pyrus japonica cardinalis is likewise a very choice and distinct form of the well known type from which it differs in bearing much larger flowers of a dark crimson-scarlet colour. Cerasus Sieboldiana rosea is also very pretty just now, as is likewise a weeping form of C. Avium, profusely covered with snow-white blossoms. Flowering shrubs, such as these, associated with the tender young leaves now everywhere opening, have a strikingly pretty effect, and should be planted much more profusely than they are.

—— We learn with much pleasure that the Pine-apple Place Nursery, one of the oldest in London, has been purchased by Messrs. E. G. Henderson & Son, of the Wellington Nurseries, St. John's Wood. Thus one of the most famous of the great London nurseries, and which has lately passed through some vicissitudes, returns to the family possession of those who founded it many years ago. The two nurseries will, from the beginning of the coming year, be parts of one concern, and be under one management. It is fortunate that such an establishment as Pine-apple Place falls into hands capable of making it again what it was before—one of the best-managed and most richly-stored of the great nursery gardens of London. We may add that the Pine-apple Nursery was founded by Mr. Andrew Henderson (grandfather of the present head of the house of the same name), whose eldest son is E. G. Henderson, the founder of the Wellington Nurseries, and who is now in his ninety-third year.

—— It is proposed to erect an aquarium and winter garden at Clifton, and a committee has been appointed with a view of obtaining a proper site.

—— Mr. Charles Darwin is said to be engaged on a new work on the comparative results of the cross-fertilisation and self-fertilisation of plants, which will contain a great mass of new observations.

—— Spiræa palmata is now brough tot Covent Garden in excellent condition, the plants being forced in small pots, and thus treated form pyramids of fresh foliage, and tufted masses of bright rosy flowers.

—— Messrs. Jackman's exhibition of Clematises opens on Monday next in the Royal Botanic Gardens, Regent's Park, and will remain open for some weeks; a beautiful collection of these plants may be looked for, and it will also contain fairly well-grown plants of the newer kinds.

—— We are informed that arrangements are being made for holding the Nottingham and Midland Counties Rose Show and Horticultural Exhibition in the Arboretum, at Nottingham, on the 6th, 7th, 8th, and 10th July next, and that a liberal schedule of prizes is in course of preparation.

Orchids in Flower at Kew.—A plant of Odontoglossum læve bears two very good spikes, one of which is much branched and nearly 2 ft. in length. This species is not common in collections, and has greenish sepals and petals, barred with brown, the lips being white with a broad blotch of purple, where it is contracted in the middle. Chysis bractescens also bears three or four of its great wax-like flowers, each having a five-ridged yellow crest. This plant, like the last, is also rarely seen in perfection, but when well grown is one of the most chaste of all Orchids. The dwarf Aerides japonicum also bears a pendent spike of pale greenish purple-barred flowers, which are delicately perfumed. Maxillaria luteo-alba is also in excellent condition, a single specimen of it bearing some twenty or thirty yellow, white, and chocolate-coloured flowers resembling those of M. picta in shape, but much larger. Of all white-flowered Orchids perhaps Pilumna fragrans deserves most notice on account of its exquisite Pine-apple-like perfume, which is most observable in the morning, but which is at no time entirely absent. A variety of Phalænopsis grandiflora bears flowers measuring 4½ in. across, but, apart from their extra size, the structure of the lip differs from that of any other variety with which we are acquainted; the terminal cirrhi being borne on a little stalk, which elevates their bases above the central blade of the lip.—B.

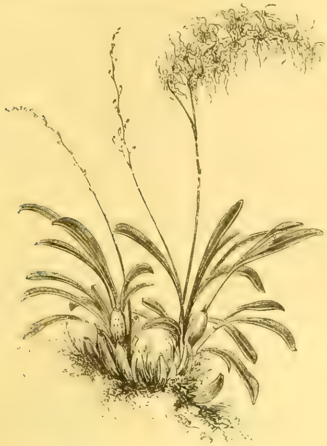
Apricot Trees and Spring Protection.—I was much interested in Mr. Groom's remarks (see p. 358) upon the protection of Apricot trees. My own opinion as regards coverings is very similar to his. I also agree with him in believing that it is a decided mistake to trust to any sort of coping, or to have young wood away from the wall. My experience has been as follows:—When I came here about eleven years ago, I found a south-west wall covered with unfruitful and not by any means healthy Apricot trees. I obtained permission to lift them. Finding that the roots had penetrated into clay of the worst description, I had a large quantity of the sub-soil removed and a good layer of concrete put in. I then filled up again with suitably-prepared soil, and closely pruned the re-planted trees. With blinds for protection, our crops are all that can be desired. Our prospects this year, in spite of the very adverse weather which we have experienced, and repeated frosts of 9° and 10° intensity, are more favourable than in any previous year. I may perhaps mention that fruit prospects generally in this neighbourhood are very good, Pears being almost the only exception.—J. Allan, *Ashurst Park, Kent.*

Dana's Hovey Pear in Sussex.—The fruit is small and very handsome, wonderfully juicy and sweet, with an aroma of extraordinary richness. It is a veritable sweetmeat, and its value is all the greater from the fact of its keeping good quite six weeks after it is ripe. Fruit, which was gathered on October 25th and was quite ripe on November 29th, was pronounced delicious on January 9th. I should add, that the tree is one of the Sawbridgeworth "double-worked" specimens, which probably has some influence upon its fertility.—Edward Luckhurst, in "Journal of Horticulture."

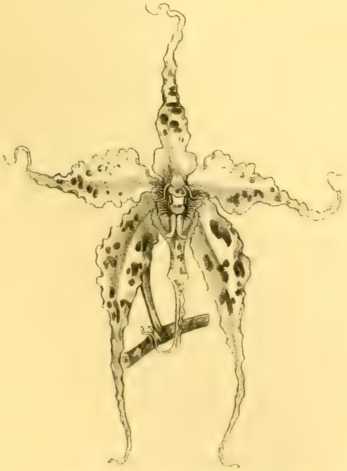
THE INDOOR GARDEN.

A NEW ODONTOGLOSSUM.

(O. CIRRHOSUM.)



Odontoglossum cirrhosum.



Flower of Odontoglossum cirrhosum (two-thirds the natural size).

This is without doubt the most beautiful Odontoglossum in the white purple-spotted group, of which O. nævium may be taken as the type; it is, however, abundantly distinct as a species—a fact worthy of notice—because now-a-days any trifling variation in size, colour, or time of flowering in the case of an Orchid, entitles it, in the opinion of some, to specific distinction, much to the perplexity of amateur cultivators. This Odontoglossum is, moreover, so chaste and beautiful that it will not disappoint the most fastidious, and cultivators may be able to form some idea of its size and attractiveness, when we state that it is just what the best variety of Odontoglossum nævium majus would be, if it could be got to produce from fifteen to twenty flowers on a spike, the individual flowers of O. cirrhosum being fully twice the size of those of the large variety of O. nævium, and they have, in addition, some rich purplish-brown streaks at the base of the lip. These bright colours on a pure white ground constitute an agreeable addition to its beauty. Our illustrations show the general contour of the plant, and a single flower of it, the latter being only two-thirds the natural size. The column is white terminated by two long awns; hence the specific name, these being more conspicuous than similar appendages in its ally, O. nævium. The growth of O. cirrhosum is somewhat distinct, the leaved pseudo-bulbs being elevated on short creeping rhizomes, and the leaves, which are nearly strap-shaped and of 9 in. or 10 in. in length, being of a very dense glossy green. The spike, about 18 in. or more in height, is erect, but nodding towards the apex, so that the portion on which the flowers are borne is, as will be seen, gracefully arched. The plant appears to have been first discovered many years ago by Captain Hall in Ecuador, on the western slope of the Andes, at an elevation of 6000 ft., and it has since been found by Professor Jameson and the Brothers Klaboch, the last-named collectors having succeeded in obtaining some hundreds of plants of it in good condition. It appears to have flowered with Sir Trevor Lawrence and Mr. Spencer Brunton, of Beckenham, nearly simultaneously, but it was first exhibited by the last-named cultivator at the Royal Horticultural Society's Meeting which was held on the 5th inst., when it was unanimously awarded a first-class certificate. As to the merits of the plant there can be no two opinions; it is one of the most beautiful and chaste of all Odontoglossums, and one without which no collection can henceforth be considered complete. The plant is one of Mr. W. Bull's introductions.

B.

PROPAGATION OF TUBEROUS-ROOTED BEGONIAS.

In most cases the want of success in propagating these arises not so much from their being difficult to strike, as from their being left until the plants are large enough to allow of the side-shoots being taken off for propagation without spoiling their effect as flowering plants. A Begonia of the Boliviensis, Sedeni, or intermedia class, when it becomes large, has no cuttings on it fit for propagation, every bit of growth being devoted to the production of flowers; true, a few cuttings may be obtained from the base of the plant, and these, by careful management, may be induced to root, but even if they do so they do not make sufficient bulb to carry them through the winter, and hence cultivators are often surprised on turning out the pots which had contained healthy little plants to find no bulbs. The cause of this is that the cuttings being taken from flowering plants had only established themselves sufficiently to enable them to fulfil their functions as flowering growth, and had not the time required to permit of their making bulbs, and the nearer the plants approach in habit to B. Veitchii the more particularly do these remarks apply to them. In the event of its being absolutely necessary (as in the case of a new variety) to take late cuttings, the evils of such a course are in a measure to be obviated by preventing the young plants from flowering, by keeping them growing as long as possible, and when they die down, by putting them away, not with the other bulbs but on a shelf in a cool-house, and giving them a little water from time to time during winter. The woody stems at the base of the cuttings will then gradually form bulbs, which will start into growth at the proper time, and they will become good flowering plants in due season. With reference to the propagation of three varieties, viz., B. Veitchii, B. rosæflora (or that which is usually sold for it, the beautiful variety originally sent out by Messrs. Veitch under that name being very scarce), and B. Corail Rose, the best way is to save some pods of seed when the plants are in flower to sow early the next spring, and thus obtain plants, some of which will probably flower the same year. There is no certain way by which the two first-named may be otherwise propagated, and as they come true from seed, any other means are scarcely worth a trial, B. Corail Rose might, perhaps, be raised from cuttings, but as cuttings are not easy to get, and as it comes tolerably true from seed that is the better way. Owing to the varieties of the B. Boliviensis, Sedeni, Dr. Masters, and intermedia class not coming true from seed, and when raised in that manner being usually very inferior to the parent plants, it is absolutely necessary to propagate them by means of cuttings, and the following way of doing this has been found to be simple and successful:—In spring, when the plants have grown from 4 to 6 in., get some good fibry yellow loam, break it up small with the hand, and mix it with about one-third its bulk of peat and silver sand; have some large thumb or small 60-sized pots crocked, and fill them with the prepared soil, which should be moderately moist, taking care not to press it too firmly; do not put sand on the tops of the pots, nor water them; next go over the plants, and with a sharp knife take off as many cuttings as can be spared just above the bulb; pull off the small green sheath that usually adheres to one or two of the lower joints, and if there be a leaf at the bottom joint, cut it off; then insert the cuttings, three or four in each pot, previously prepared, round the edges. They will root in almost any temperate shady place without a propagating frame, or even in the house where the cuttings were taken off, provided it be not too dry. But the plan which I adopt and consider the best is to put them under the middle stage on the bare earth, in a temperate moist house, where the sun's rays and the heat from the pipes cannot reach them, giving them no water, unless they show signs of flagging, until they are rooted. They soon make roots if taken at the proper time, and when in proper condition should be potted off singly and put back in the same place for a week or so, when they may be grown along with the general collection. Cuttings of these Begonias will also strike in the spring if inserted in Cocoa-nut fibre or tan in a gentle bottom-heat; but the former mode I have always found to be the best. Cultivators of these Begonias should bear in mind that although young plants of them like a little heat, the older and stronger ones do not require it, and that their proper place is the conservatory or cool house, where they will last much longer in bloom than they do in a warm house; indeed some of our neighbours who have sheltered gardens grow many varieties of them in the open ground in summer. James O'Brien.

CULTURE OF THE DOUBLE CHINESE PRIMULA.

Although perhaps inferior to the single varieties in point of brilliancy of colour and general capability for effect, the double Chinese Primula possesses certain qualities which render it in some respects even superior to them. It is, without question, one of the most useful plants for the production of cut flowers in the winter; for this purpose, indeed, it is simply invaluable; in fact, a bouquet which is required to be composed of flowers of a chaste and delicate character, can hardly be considered complete without it. One of its greatest merits consists, perhaps, in its ability to keep up a continuous successional supply of bloom during that very dull stagnant period of the year when cut flowers are so much in demand and so difficult to produce. A few large well-grown specimens kept growing in a temperate house will furnish bloom during the winter, and, as the individual flowers last for a long time, and do not easily become shattered, they are as serviceable for the embellishment of vases, epergnes, &c., as for bouquets. A glance into Covent Garden Market will serve to give any one an approximate idea of how much this flower is in demand, and to what an extent it is employed. Some few years ago there were but two or three varieties of double Primulas; but now that some really novel and fine varieties have been raised, their culture has been rendered more attractive. Owing perhaps to the fact of their being increased by means of cuttings only, their culture has never become quite so popular as might have been expected. Although fairly easy of propagation, many cultivators do not appear to obtain much success in their attempts to increase their stock, which oftentimes gradually dwindles, and their culture is relinquished under the erroneous impression that they are naturally miffy and delicate, and therefore unsuited to general requirements. The greater part of these failures may, I think, be traced to impatience. Propagation should never be attempted from young plants, as therein lies a double danger—the cutting itself is scarcely ever so free, and the taking away a portion of foliage from a weak plant is apt to paralyze the root and cause decay; the rooting of the cutting is therefore more uncertain and the death of the parent plant itself problematical.

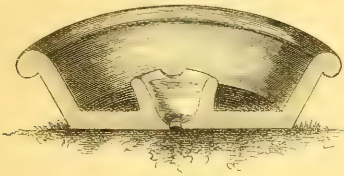
Let a few plants be grown on till they get into 24-sized pots, and if they have had fair treatment cuttings may safely be taken from them without any risk of endangering their life or checking their development. Although somewhat slow of growth in the early stage, the double Primula will make rapid progress when once a fair head of foliage is formed, and it is not difficult to obtain specimens 2 ft. or 3 ft. through by the second season. It is when they arrive at these proportions that they become so valuable for cutting, the amount of flower produced by a large healthy plant being quite surprising. The soil which appears to suit them best is a mixture of well-decomposed leaf-mould and fibrous loam, in about equal proportions, to which may be added some thoroughly rotted manure and about one-third of silver sand to the whole. The soil should be moderately fine and moist but not wet when used, and the plants only potted with that degree of firmness which tapping upon the bench and ordinary pressure of the fingers will ensure. The crown of the plant should be kept well up and the surface of the soil made smooth and firm. During the winter and early spring months, the plants should be kept in a temperature ranging about 50° at night and 55° to 60° during the day, which will keep them gently moving, too much heat, especially at night, causing a weakly growth. Air should be given on all favourable occasions, and in spring and summer they will require shading on hot days. In damping down the syringe must be carefully used, as a few stagnant drops of moisture in the crown will cause the bloom to decay, and this will sometimes take place so suddenly as to leave no time to repair or prevent the mischief. In damp weather, too, the waterpot must be carefully used, allowing the plant to dry thoroughly before watering; a wet stagnant surface will cause decay to set in at the collar, and the healthiest plant will suddenly turn sickly and die from this cause, decay being germinated between the point where root and foliage unite. During the summer months the plants may either be kept in a cool house or turned out into a pit; provided they receive plenty of air sufficiently impregnated with moisture they will do equally well in either situation. As soon as the damp cool days of autumn approach, however, they should be replaced in their winter quarters, as a continuous low temperature will produce torpidity of the root, and if permanent healthy growth be desired, checks of this description must be avoided as much as possible. With respect to re-potting give them no greater amount of fresh soil than is absolutely necessary; let the shift be as small as possible, ascertaining that it is really required; the soil being used somewhat fine will admit of this recommendation being carried out. When once the desired size is attained, health and vigour may be preserved by an annual top-dressing and an occasional watering with guano water. The propagation of the double Chinese Primula may be carried on through the whole year, the early spring months being perhaps the most favourable for that purpose. They should be taken off with a slight portion of heel attached and inserted singly in thumb pots, placing them under a hand-glass upon slight bottom-heat. A little air should be left on at night, and if the glass be removed for an hour or two in the morning, it will be advantageous, preserving the foliage and preventing damping. In the summer they will root freely enough in a close house with the protection of a cloche, and when once a few large plants are obtained, the getting up of a stock of this plant is comparatively easy. John Cornhill.

Byfleet.

Fuchsia Boliviana.—This Fuchsia is a native of Bolivia, where it was discovered by M. Roezl in 1873; it is nearly related to F. corymbiflora, which it somewhat resembles, although much superior to that kind in point of beauty. Its branches, which are from 18 in. to 2½ ft. long, bear flowers of the brightest coral-red; their sepals are sharply pointed and stand out boldly, being sometimes reflexed. The stamens, which are red, have white anthers that rarely project beyond the flower. This species has been a great favourite in France ever since its introduction in 1874, in the October of which year the Central Society of Horticulture awarded it a first-class silver medal. Planted out in the open air in summer by the side of F. corymbiflora, it has only grown to about one-half the height of that species; and while F. corymbiflora does not flower until very late in autumn, F. Boliviana commences to bloom in the summer, and continues without interruption until checked by frost. It forms a large compact bush, frequently bearing from ten to fifteen branches, all of which terminate in a long cluster of flowers, and as the season advances it makes a second growth, so that by the end of October it is nothing uncommon to see plants of it 2½ ft. high, and only seven months old, bearing over thirty bunches of ruddy blossoms. It would, perhaps, be rash to describe this species as the most beautiful which we possess, but it certainly may be asserted that none are superior to it. Its abundant flowering qualities, the brilliancy of the colour of the flowers themselves, joined to its dwarf habit, must always place it high on the list of our best Fuchsias. It is easily grown, and thrives well in almost any soil. It may be propagated by means of cuttings, which strike root readily.

DENNING'S POT-SAUCER.

The accompanying woodcut represents a garden saucer of considerable utility invented by Mr. Denning. As will be seen, it is really a circular trough, the pot standing on the inner rim. The centre, however, is not open, but a cup into which the overflow from the rim and the drainings from the pot escape and pass away through a hole in the bottom. Into this central cup the roots of some plants descend and find moisture. The advantages of this saucer are that it keeps the plants moist, without subjecting them to saturation; it allows of frequent waterings with fresh water without inducing rotting or stagnation of the soil. The common garden saucer, judiciously used, is a great aid to the cultivator, and answers perfectly for many purposes; but this has special value in many cases where the other would be worse than useless, and it deserves general adoption in gardens where many plants are grown. It is made for Mr. Denning by Messrs. Down & Harlock, Cheam, Surrey.



Section of Pot-saucer.

Boiler-water for Plants.—I have been in the habit of using boiler water for taking the chill off the water with which I watered all kinds of fruits and plants commonly grown under glass for many years, and I have known many others do the same without any bad effect, but I should not think of using it for syringing for fear of depositing a sediment on the foliage. For that purpose it is better to fill a few pots with pure soft water and allow them to stand on some heated surface in the houses until the water has attained the requisite temperature. Of course where hot water is drawn from the heating apparatus for watering it is absolutely necessary that the supply-cistern, even if regulated by a ball-tap, should be looked to every evening.—E. H.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Eranthemum tricolor.—This is a free-growing, soft-wooded stove plant, introduced from the islands of the South Pacific Ocean. The leaves are olive-green, blotched irregularly with grayish purple and salmon-pink, the tints being varied more or less, according as the colours are here and there differently blended. The tendency of the marking is, however, for the older leaves to be mottled with purple, and the younger ones to assume more of a salmony tint. It is a plant which, when better known, cannot fail to be a favourite.—B. W.

Garden Frames.—These somewhat antiquated occupants of our forcing-grounds have outlived many contrivances intended to supersede them, and, even where heating by hot-water has been carried to its greatest perfection, an ordinary garden frame heated by means of fermenting material still holds its own in point of usefulness, simply because its moist, warm atmosphere is more congenial to freshly-potted plants or cuttings than that of more imposing structures.—J. Groom, *Henham.*

THE FRUIT GARDEN.

THE CURL-TAIL PIPPIN APPLE.

Have any of your readers experience of the merits of an Apple which is much grown about Weybridge under the name of the Curl-tail Pippin?—so named from the peculiar formation of the foot-stalk, which is fleshy and curves inwards. Its principal recommendations are the general usefulness of its fruit, and the free-growing character of the which, owing to its flowering considerably later than most other kinds, generally escapes the spring frosts. As a rule, it only bears every other year, the great quantity of fruit which it produces the one year preventing the formation of bearing wood the next. Where there is a plantation of this variety, however, one-half of the trees might be disbudded, by which means an annual supply would be ensured. It is fit for either dessert or culinary purposes, and is, in fact, one of the best Apples for baking or roasting with which I am acquainted. Its flesh is delicate and juicy, and remarkably free from acidity, and it keeps well without shrivelling until May. We have been using it all through the winter, and we find it quite as good and as fresh now as earlier. It seems to possess rot-resisting powers to a remarkable degree; for, if the fruit lie in a dry place, bruises received early in the season do not appear to have the power to spread, but remain without alteration throughout the winter; the fruit is of fair size, thin-skinned, a greenish-yellow when ripe, and, where fully exposed, streaked with red on the sunny side. Some one may be able to recognise it from this description, as I suspect that it must be grown in other districts under another name—Curl-tail being, I should imagine, purely local. John Cornhill.

Fresh Figs in March.—The early Fig house in the gardens at Gunnersbury was started on November 14. Fine ripe Figs were gathered in the middle of March, and now a second crop is ripening. Mr. Richards hopes to gather Figs from the same house throughout the summer and autumn. Grapes we can buy at all seasons, but ripe Figs in March and April are not market products, though we think them as well worthy the gardener's skill as any known fruit. The Fig is a neglected fruit, at least so they think who know it well, and the fact that it may be had in perfection for so long a period should be a farther encouragement to its culture.—V.

New Belgian Grapes and Peaches in Covent Garden Market.—I have just seen a small box of hot-house Grapes (Black Hamburgh) imported from Belgium; they are of very good quality, and are in first-rate condition, so much so, that one would almost have thought that they had been grown in the neighbourhood of London. The only fault is that the bloom is slightly rubbed. Belgian cultivators are growing these Grapes in large quantities for the London market; and they also intend sending next week hot-house Peaches, which I am informed are very good. I am afraid that some of our English growers will not like such importations as these, which are sure to very much affect our markets—Peaches coming, as they do, at least a month before ours are fit for use. We are still having large supplies of St. Michael Pines, which are of first-rate quality; and I am afraid that our Grape and Peach growers will, like our Pine growers, have to give up the culture of early fruits; as regards Pines, we seldom see an English one now in the market.—A. Garcia, *Centre Row, Covent Garden Market, April* 20.

Span-roofed Houses v. Garden Walls.—Like Mr. Gilbert (p. 383), I would gladly exchange our garden walls for span-roofed houses—not those small narrow structures recommended years ago under the name of glass walls—but good roomy houses, which from the large quantity of air enclosed are less exposed to sudden and extreme changes of temperature. I should also like to transfer the main crops of hardy vegetables to some contiguous but less conspicuous place, where they might have something more nearly approaching open field culture than is possible under the present system. Under this plan, where in large gardens some six or eight acres are now enclosed by high brick walls, less than a fourth of that space, if enclosed by span-roof houses, would be ample, and in fruit culture this reduced space so treated would yield more certain, and consequently more satisfactory results. This enclosed garden might be devoted to fruit trees trained on the cordon system, reserving certain beds and borders for Strawberries, salads, and a few early vegetables. The main crops, as I have already suggested, could be better grown away from overhanging fruit trees, and where the spade could be fearlessly used, without running any risk of injuring the roots of trees growing near. The orchard of standard trees would of course remain as at present; and the vegetable garden, surrounded and sheltered by good Thorn hedges, might occupy a position near, and the whole might be so arranged as to do justice to everything, which is certainly not the case under the mixed system now generally adopted. In making new gardens or remodelling old ones, I venture to recommend this idea as one deserving serious consideration.—E. Hobday.

The Caprification of Figs.—Your remarks on Figs (see p. 383) remind me of some very singular statements made by Tournefort, in his "Voyage du Levant." He was sent by Louis XIV. of France to report on the natural productions, &c., of Turkey, and among other things he has a great deal to say about Figs. Turkish Figs grow to a great size, as your readers may see by purchasing a box from the establishment of a West-end London grocer. Tournefort accounts for this abnormal size by saying that the cultivators, at a certain stage in the development of the fruit, bring the branches of the wild Fig and place them among the cultivated kinds. At this period a certain moth emerges from the pupa form, and soon after begins to lay its eggs. It deposits these at the eye of the cultivated Fig; and Tournefort asserts that the process, which is known as caprification, causes an irritation in the fruit, and leads to a greater flow of the secretions of the plant to it, so that it develops to an unusual size. He states that this plan may be tried at home by puncturing the growing fruit at the eye with a silver pin or bodkin dipped in sweet oil. This would be worth trying. I have not the book by me, and quote from memory; but if Tournefort be right, the presence of so many grubs in our Fig boxes would be accounted for. Many kinds of Figs are imported into England, the so-called wild or "natural" Figs among them.—P.

The Spur System of Pruning Vines.—The statement (see p. 383) of Mr. Douglas—a grape grower of ability and experience—that the spur system of pruning Vines produces barrenness and debility if continued for years, I read simply with astonishment. A more misleading statement was never penned. I am myself an advocate for moderate and constant extension, but I would not venture to limit the time at which Vines would cease bearing altogether, and only be "able to produce weakly growths which never showed fruit, nor never would," because they were spur-trained, if cultivated with ordinary skill. I could show Mr. Douglas examples of Vines here and elsewhere which have been restricted to single rods and spurred in close for nearly twenty years, without abating perceptibly either in vigour or fruitfulness. I speak within safe limits, for I found Vines here (and had good crops off them for some years) that appeared to have been spur-trained from time immemorial, and I have no doubt that plenty of similar instances could be furnished. When I saw the great Vine at Hampton Court years ago, it looked to me as if it had not extended its bearing limbs for a century, for they were as thick as my arm, and spur-pruned, if I recollect aright. —J. S. W.

Pears on Apple Stocks.—These are of no value; they will only live for a few years, and even during that time they are spindly, and the fruit is small and worthless; such, at least, is my experience, and the same also applies to Apples grafted upon Pears. Some years ago I put 100 Apple grafts, consisting of twenty sorts, on healthy young Pear stocks, and all, or nearly all, grew pretty well. Some did very well the first year, the second year more than half failed, and the third year only six were alive, and these consisted of Golden Winter Pearmain. They bore fruit about as large as a small hen's egg, sour and worthless, and then they died.—J. Scott, *Merriott, Crewkerne.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

St. Michael Pine-apples.—Last week I tasted one of these Pines, a Smooth Cayenne, weighing 7 lb. It cut up particularly firm, without the blemish of a black heart, and was very rich and excellent—in short, it was a better Pine than could be grown at this season in "Merrie England."—R. Gilbert, *Burghley.*

Green-fruited Black Currant.—I have grown this Currant for the last twenty-five years, and have known it nearly double that time. It cannot be so scarce as your correspondents imagine, as I have from time to time sold large quantities of it. It has one good property, the birds do not meddle with it until all other sorts are over. I have described it at p. 170 of "The Orchardist." —J. Scott, *Merriott, Crewkerne.*

Evils of Grafting on Large Branches.—Established trees cut back and re-grafted are almost sure to be fruitful, *i.e.*, if moderate-sized branches be grafted, as the wounds in that case heal quickly, and the check given to the tree induces fruitfulness, but if large limbs be operated upon, it is impossible for the wounds to heal, and dead wood is the result, which, being exposed to the weather, quickly rots, and the accumulating moisture causes the whole tree to speedily decay.—J. Groom, *Henham.*

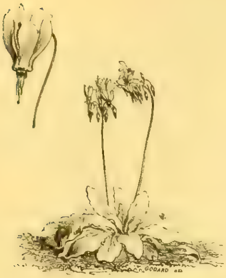
The Weather and the Fruit Crops.—On the morning of the 15th inst. the thermometer registered here 6° of frost, and Gooseberries and Currants being about flowering have sustained some injury. I see that the bunches of the Currants only now show a few blossoms likely to produce fruit at the points, all the earliest opened flowers being destroyed. All the young Gooseberries are likewise injured at the top of the bushes, but the foliage saved those lower down. Pears, Plums, and Cherries had not opened their flowers at the time, and they are as yet apparently safe.—W. Tillery, *Welbeck.*

THE FLOWER GARDEN.

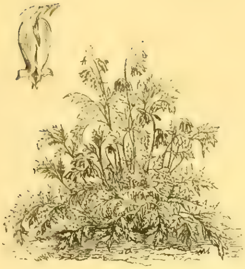
HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The pale green yellow Uvularia of last week is now a rich gold colour, and the round buds of the Bloodroot (Sanguinaria) have changed to very handsome star-shaped blossoms 2 in. across. The gardens are now full of the early flower-garden Tulip, mentioned a few weeks ago as then opening its earliest blossoms. These Tulips seem to have withstood the severity of the season better than the Hyacinths, or, indeed, any other flower. One of the brightest gems in the garden flora of the week is the deep rosy American Cowslip (Dodecatheon splendidum), of which there is a number of plants in the Wellington Nurseries. It is a lovely rock garden flower, and thrives on the level ground in good soil. It appears somewhat earlier than the common American Cowslip. The Evergreen Alkanet (Anchusa sempervirens) is full of flower; it is a plant for groves or shrubberies, in a semi-wild state. The ground Ivy and the blue Nepeta are opening their flowers, as is the Myrrh (Myrrhis odorata) an inhabitant of the old herb or medicinal garden, which deserves a place in collections for its grace, its odour, and its flowers. It would do well on any rough bank, or in any copse. The Globe-flowers are out on the London clay, not yet of their true colour, and various herbaceous Euphorbias are opening their greenish-yellow flowers, not without beauty and effect; they are mostly fitted for shrubberies or rough banks. The quaint-looking Pennsylvanian Saxifrage, the Ivy Saxifrage (Saxifraga Cymbalaria), and Veitch's Primrose (P. cortusoides amœna) are beginning to flower in the open ground. The Solomon's Seal is opening its earliest flowers on the warm soils round London; it is one of the many hardy flowers that might adorn the surfaces of our shrubberies if the practice of annual digging were abandoned, as it probably will be some day. A tuft of the rich purple Crocus-like Triteleia Murrayana is flowering in Messrs. Barr & Sugden's bulb grounds at Tooting, its foliage being linear and similar in general appearance to that of the large-flowered Sisyrinchium. The soft yellow-flowered Dog's-toothed Violet (Erythronium grandiflorum) is also now in bloom, and is a most desirable plant; it bears two or three reflexed Lily-like flowers on a stem a foot in height, the green undulate-margined leaves being marbled with pearly grey. Some forms of the Apennine Windflower (Anemone apennina) are now in blossom, one of the rarest being A. alba, while the proliferous A. bracteata is remarkable for its singularity when closely examined. Of all the forms of the wood Anemone now in flower a broad-petalled bluish-lilac kind, on the rock-work at Kew, is the best; its blossoms are as large as a florin, and they rise from amongst fresh green foliage like that of the type. This plant is even more beautiful, although not so early, as either A. blanda or A. apennina; it is known in gardens as A. Robinsoniana, and at Kew as A. nemorosa purpurea. Several Fritillarias of the F. Meleagris section are now very effective; one called F. rosea, the colour of which is white with rosy tesselations, is very effective, and F. alba, a white-flowered variety, is also just now

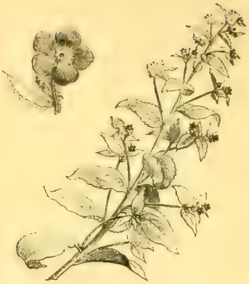
White Mountain Narcissus (N. montanus).



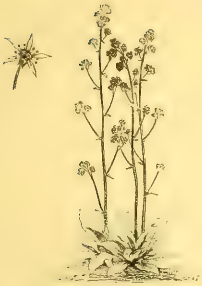
American Cowslip (Dodecatheon Meadia).



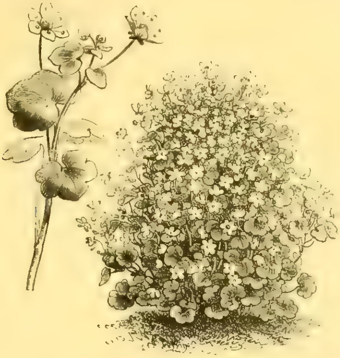
Plumy Dielytra (Dielytra eximia).



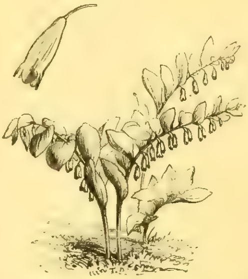
Evergreen Alkanet (Anchusa sempervirens).



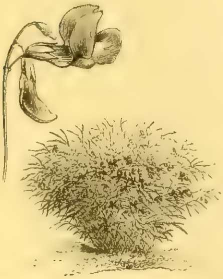
Pennsylvanian Saxifrage (Saxifraga pennsylvanica).



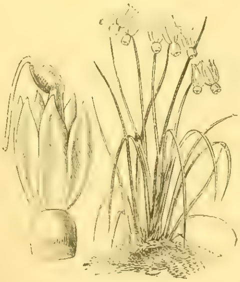
Ivy Saxifrage (Saxifraga Cymbalaria).



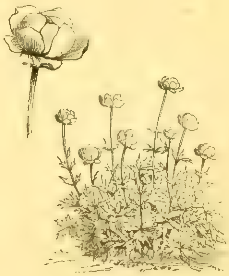
Solomon's Seal (Convallaria Polygonatum).



Narrow-leaved Bitter Vetch (Orobus flaccidus).



Cyclamen-flowered Narcissus (N. triandrus).



Globe-flower (Trollius europæus).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

very beautiful, bearing egg-shaped flowers on tall gracefully-arched stems, like those of the common Solomon's Seal. The vivid orange scarlet-flowered Tulipa Griegi is likewise now much more effective than when we saw it a fortnight ago; it is a kind which is readily recognised by its glaucous leaves being heavily lined and blotched with dull purple markings, and one which henceforth is destined to occupy a place along with its allies, T. gesneriana and T. sylvestris, the latter of which is also in bloom, its graceful habit making ample amends for its want of brilliancy in point of colour. Several late-blooming species of Narcissi are now in great beauty, and among these one of the most graceful is the reflexed or Cyclamen-flowered Narcissus (N. triandrus), which has bright green Rush-like leaves, and pale lemon-petaled, white-capped flowers, numbering four or five on a scape. In Mr. Parker's nursery it is just now in perfection, along with the pigmy N. juncifolius, and several distinct forms of the Hooped Petticoat Daffodil (N. bulbocodium). The drooping White Mountain Narcissus (N. montanus), or N. galanthifolius, as it is sometimes called, is now in bloom at Kew, and well deserves a place in all select collections. In the same establishment are also six distinct forms of the common Caltha palustris, to which we alluded a week or two ago, and very beautiful they are, growing as they do by the margin of a shallow stream. The best of the single-flowered group has blooms as large as a crown piece, and of the purest golden-yellow colour. This variety is an effective plant for the margins of ponds, ditches, and brooks, as is also the rich orange form with double flowers, known as C. palustris minor fl.-pl. One of the sweetest and prettiest of all hardy aquatic flowers now in bloom is the Hawthorn-scented Aponogeton distachyon and its varieties minor and acuminata, all of which, however, have been in bloom since last Christmas. The Water Violet (Hottonia palustris) is likewise now opening its pale pink blossoms, and the surface of nearly every sunny pool is enamelled with the silvery star-like flowers and fringed leaves of the Water Ranunculus (R. aquatilis). Iris nudicaulis is showing colour in the open border, and associated with it are its allies, I. pumila alba and I. pumila cœrulea, the one white, the other delicate sky-blue. Among the various species of dwarf Vernal Phlox, a deep violet-carmine form of P. setacea is now especially beautiful, forming dense tufted masses of starry flowers; the glaucous-leaved Omphalodes Luciliæ, too, is also very lovely, its flowers being nearly as large as a shilling, and of the most delicate porcelain blue tint imaginable. One of the earliest and most distinct of all the Larkspurs is Delphinium nudicaule, a kind which is now opening its dull scarlet flowers.

Anemones at Drayton-Beauchamp.—Few flowers in my garden please me more at the present time than the little vernal Anemones. A. Pulsatilla was very bright and gay till Good Friday, but the thick covering of snow under which it was buried for nearly two days has washed out all its colour and made it a perfect wreck. A. ranunculoides has stood the battle of the elements bravely, and its golden flowers are almost as fresh and bright as before the storm. A. apennina had the wisdom to keep most of its cœrulean buds unexpanded till the worst was over, and to-day (April 18) it is looking very beautiful. Its white variety is a gem in its way, well-matched by the pale straw-coloured form of A. ranunculoides, which I had from Kew under the name of A. ranunculoides nemorosa. A. bracteata flore-pleno is a grand plant; I know nothing prettier than a fully-expanded patch of its pearly stars, each with its green and white frill. A. nemorosa major is a very specious plant when left alone for several years and allowed to become a strong clump; and A. trifoliata, with its very distinct three-lobed leaves and white flowers, is very delicate and graceful. The Queen of them all, however, is A. nemorosa cœrulea, otherwise A. Robinsoniana, which has the outside of the petals white, and the inside the most lovely pale sky blue. I have nursed up my tubers till I have enough to plant round a standard Rose tree, and a fair and lovely sight it is to behold. A. stellata, pavonina, hortensis, fulgens, and nemorosa flore-pleno are all beginning to open out, but have been much nipped and checked by the inclement weather. A. narcissiflora, sulphurea, vernalis, and sylvestris are pushing up, and so is a small pale yellow species with a much divided leaf, which I had as A. dichotoma. A. palmata with me just lives, but never flowers, and I have never yet succeeded with A. alpina. Seedlings of A. baldensis are growing well, and I hope next spring to add this to my list of flowering plants. I hope it will not be long before some one introduces the white variety of Anemone Pulsatilla, and the pink and white forms of A. blanda.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

The Officinal Rhubarb as a Decorative Plant.—It is mentioned (see p. 376) that the Officinal Rhubarb (R. officinale) would seem, by the vigorous way in which it is coming up at Kew, to be of some value as a decorative plant. In my opinion an established plant of this fine Rheum is (with, perhaps, the exception of Gunnera manicata or G. scabra,) the most imposing of all fine-leaved herbaceous plants. There is a fine specimen of it at Kew. It is perfectly hardy, though the huge leaves begin to unfold themselves so early that they are often injured by spring frosts. A plant here, though little more than one year old, is already effective, much more so than the better known Rheum Emodi.—Oxon.

A Bank of Rose Trees.—The simplest and most effective way of producing a good display of Roses is to plant three or four rows on each side of a walk—standards, half-standards, and dwarfs, each row a foot lower or higher than the next—say, the front row all dwarfs, the second worked on stocks 1 ft. high, the third 2 ft., and the fourth 3 ft.—the heads of the lowest hiding the stems of those above them. The plants should be set about 2½ ft. apart. When the whole are in flower, one has a bank of Roses on each side of the path, the effect of which is showy in the extreme. None but free-blooming hybrid perpetuals should be used for this purpose, and they should be allowed to grow freely without using the knife. They must be well manured, and watered with liquid manure during the growing season.—Henry Taylor.

Plant Collecting in the Tyrol.—"Wanderer," in his "Botanical Tour through the Tyrol" (see p. 391), mentions Campanula pulla as one of the plants met with on the Schlern, near Botzen, but in this, according to the following extract, I feel inclined to believe he must have been mistaken. Baron von Hausmann writes about this plant in his "Flora von Tyrol," p. 554, 1851:—"C. pulla has become doubtful for the Tyrol; the positions indicated by Pollini belong, according to Bertoloni, to C. Morettiana. Perhaps it may occur in the mountains bordering on Salzburg and Styria. In Switzerland, likewise, according to Moritzi, it does not occur; nor could it be found on the Glockner by the chaplain, David Pacher." The fact of the author of the "Flora von Tyrol" being himself a resident of Botzen, in the close vicinity of the Schlern, makes it appear most unlikely that he should have overlooked the plant if it really did occur there.—Scholastika.

Root-grafting Seedling Briers.—Some twenty years ago, Roses being greatly in demand at Lyons, especially dwarf kinds, M. Guillot conceived the idea that quick results might be obtained by budding on young seedlings of the Dog Rose such kinds as did not grow readily from cuttings. The seed of the latter was sown in February or March under glass, and the young plants were pricked out when about a year old. In August or September they were fit for budding, when the soil was stripped from the bases of the shoots, and the buds were inserted as closely as possible to the collar. After they had taken, the stems of the Dog Roses were cut off, and the shoots from the buds allowed to take their places. The tops of the Dog Roses being thus destroyed, their roots do not produce a single sucker, and the shoots from the buds become completely identified with the roots on which they have been worked. Roses propagated in this way are said to acquire increased hardiness and vigour, the Dog Rose stocks furnishing them with large quantities of roots. So much we learn from the "Cultivateur" of Lyons.

Pentstemon Crimson-Bedder.—As its name suggests, this claims to be useful for bedding purposes, and so it indeed is. It is a compact and vigorous sort, yet comparatively a dwarf grower—reaching the height of 18 or 20 in. at the most. It is a most abundant bloomer: the flowers are a very rich crimson, with a dash of purple in them, and with white throats slightly suffused with purple. For back lines in wide borders, or in centres of large beds, it presents a shade of colour not common.—"The Gardener."

Single Wallflowers.—These make excellent centres for large beds or back lines for ribbon borders, or, perhaps, better than either, for furnishing balcony and window-boxes. When associated with dwarf hardy edging plants and early flowering bulbs they have a good effect, even during the dullest months, and in spring their delicious fragrance is especially welcome, many of our other popular early flowers being scentless. I find the dwarf Blood Red and Belvoir Castle Yellow the most serviceable kinds, and by sowing seeds of them early in April and pricking out the young plants in single lines as soon as they are large enough to handle they form neat little bushes furnished with abundance of foliage to the ground.

When lifted in autumn great care should be taken to keep their roots intact, and they should be replanted firmly and somewhat deeper than when they were in nursery beds. Should they get swayed by the wind, which they sometimes do, they should be firmly secured by pressing the soil closely round the bases of their stems. In mild winters well-matured plants commence to flower very early, and as the season advances great care should be taken that plenty of moisture is supplied, or they will quickly run to seed.—J. Groom, *Henham.*

Destruction of Primrose Flowers.—I have often had Primrose blooms injured in a similar way to that complained of by "Essex" (see p. 380), and I have always attributed the mischief to some small birds destroying the calyx to get at the nectar situated at its base. I have, however, had much greater damage done by small birds to the large compact double flowers of the French and African Marigolds in the autumn, and have seen the soil beneath a bed of these plants literally strewn with their petals. I have hitherto been unable to ascertain what object the birds had in view in this case, not having as yet found insects in the flowers sufficient to warrant such wholesale destruction.—A. D.

Wild Gardens and Woodland Flowers.—You will, I feel sure, be liberal enough to let me make a respectful but emphatic protest against such wholesale spoliation of our woodlands as that practised by "Forester" (see p. 352), whose three cartloads of Daffodils appear to inspire you with satisfaction. Why, he must have stolen myriads and myriads of these lovely bulbs from a spot where they were a joy to many, in order to transplant them to a private drive, where at best only a few can appreciate them. Try to realise what three cartloads mean, and you will not think my protest unreasonable. You can put ten or twelve clumps, containing each as many bulbs, soil and all, in a hand-basket. Three cartloads would cover as many decent-sized copses. I know well what digging up Daffodils means. I have often done it, but I hope I have made it a point of conscience to select and spare. I love my wild garden, and have brought plants to it from many a county—aye, and many a country outside Great Britain; but I should hold it a sin against the happiness of others, and against the prodigal bounty of Nature—who does not construct private drives—to dig up without compunction. It is always enough to take one's specimen conscientiously, and let it grow and multiply. In places where species are scarce, it is well to mark the spot, and wait till the plant has developed and spread. I trust you will see that there is something selfish in wholesale cartloading away of the flowers of our meadows, banks, hedges, and copses, and that if encouraged it will certainly endanger not the wild gardens but the woodlands.—Exmouth. [Our correspondent should remember that others may transplant judiciously as well as he. In the case refered to, hardy plants were simply brought from a wood which they overran to the margins of green drives, where they may increase and beautify the ground. There are many woods from which waggon-loads of the Lily-of-the-Valley might be removed without the plant being in the least danger of extirpation. We may find a populous colony of Solomon's Seal in a quiet rarely seen nook, and do good by dotting it here and there in woods where it does not occur. There is a marked difference between the increase of beautiful plants by transplanting them, and the destruction of rare species by gathering them, often root and branch, to exhibit at flower shows.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Seedling Alpine Auriculas.—I can fully confirm the truth of Mr. Taylor's remark respecting these (see p. 380) and would strongly advise all lovers of Auriculas to lose no time in carrying out his recommendations regarding them; for, even if they already have a choice collection of named varieties, they will derive both profit and pleasure from raising every year a batch of seedlings. I have many fine kinds in flower now, which shows that seedling raising well repays the small amount of labour attending it.—J. Groom, *Henham.*

To Destroy Ants in Flower Beds.—A very effective plan is to pour a little quicklime on the mouth of their nest, and wash it in with boiling water. Should they have formed their nest at the root of a plant, pour upon them a quart or so of warm water, in which a moderate-sized piece of camphor has been steeped. This (says the "English Mechanic") effectually destroys them, and is not in the least injurious to the plants.

Orobus cyaneus.—I am glad that Mr. Niven (see p. 380) gives a well-deserved tribute of praise to this pretty little Orobus, which is now in full beauty and should be seen in every garden.—Oxon.

The Japan Rose from Root-cuttings.—We learn from Mr. Perry that even the finest fibres of the roots of the handsome White Japan Rose (R. rugosa alba) afford strong plants soon after their insertion.

A Pretty Spring Contrast.—The Grape Hyacinth and common Primrose make a beautiful mixture when the former is grown thickly and in well-established clumps.—P.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Fuchsias struck last summer and that were placed in their blooming-pots some time ago will now be coming into flower, and should be encouraged with manure-water as soon as the pots get moderately filled with roots; this will tend to prolong their flowering, but, in applying liquid stimulants to Fuchsias, care must be taken that the dose be not too strong or it will cause the unexpanded flowers to drop off; the Fuchsia will not bear so powerful a stimulant as the majority of free-growing plants. Fuchsias are also very subject to red spider, which can only be kept down by a constant use of the syringe. Amateurs will find it a safe practice to syringe the plants even after they come into flower, as their bloom will in no way be injured by the water if applied gently, and let them especially notice that it gets to the under side of the leaves so that the whole surface may be moistened, or it will not be effectual. Inattention to this matter is frequently the cause of these most useful and generally-grown plants becoming shabby and partially denuded of leaves long before they otherwise would be if in vigorous health. Old plants that have been cut back, shaken out, and re-potted, will come early into bloom; but in cases where it is more desirable to keep a portion for flowering later in the summer, they should be moved into larger pots, have their shoots repeatedly stopped, and not be exposed to too strong a light. Plants treated thus will be much larger and the flowers proportionately more profuse. A position under the partial shade of Vines will be suitable for these, as the effect of too bright a light on Fuchsias when the days are long is to stop further growth and induce a determinate disposition to flower.

Pelargoniums of the show and fancy kinds, that are intended for early blooming, will now be benefited by the application of manure-water once a week; this will not only increase the size and appearance of the individual flowers, but will enable the plants to produce a succession of bloom much longer than they would if nothing of an invigorating nature were added to the manurial elements contained in the soil in which they are grown. The great advantage in the use of liquid stimulants to the majority of plants whose roots are confined within the limits of a pot, is that it sustains and prolongs a vigorous development just at the time it is required; whereas if the soil be made too rich in the first instance at potting time, the result is the production of rank growth early in the season before the formation of flowers takes place, which is generally detrimental to free blooming. Zonal Pelargoniums, to succeed the foregoing, should receive the necessary attention in tying out, stopping the shoots to induce a bushy habit, and the removal of all flowers when they first appear that will expand before the desired time; for although these plants are very free and continuous in their disposition to bloom, yet they produce a much greater head of flowers, and are more effective when not allowed to open for an indefinite period. Though useful decorative subjects, it is not advisable to grow too many of these Zonal Pelargoniums; their easy culture and the undue prominence of late given to them has induced many amateurs to grow them in such numbers as to exclude that variety so essential in plant houses, and to make the contents in some cases little better than mere collections of these plants.

Hydrangeas, now showing flower, will also be much benefited by manure-water; if in small or moderate-sized pots (in which they are much the most useful) they will succeed better if the flowering shoots be thinned out, as this operation will cause the blooms to come much larger. Most useful summer decorative subjects, commendable alike for their easy growth, and handsome flowers produced for a considerable period, are the blue and white varieties of Campanula pyramidalis; if a number of these plants be grown they will come in bloom about July, when indoor flowers are scarce; they are equally adapted for mixing with others in the greenhouse, conservatory, or for room decoration; for the latter purpose there are few summer-flowering plants so well suited as these, their natural habit being such that they do not become drawn, thus spoiling their appearance by the partial light they must necessarily receive in such places. They should have pots proportionate to their strength and the size to which it is intended to grow them. A plant in a 10-in. or 12-in. pot will produce spikes 6 ft. or 8 ft. in height if well managed; they can be grown either from the suckers produced from the base of plants that are about to flower, or from seed; in the case of the former, the suckers should be now taken off, they will in most cases have formed a little root, and should be placed singly in small pots, and covered with a bell-glass for a few weeks until they get established, after which they must be gradually inured to the air. They are easily managed, and succeed well in ordinary loam mixed with some sand and decomposed manure; move them into 6-in. pots in the summer when well rooted, and subject them to ordinary greenhouse treatment, with sufficient light, air, and water. If required to be grown from seed, sow at once in a seed-pan, drained and filled with sandy loam, to which has been added one-fourth of leaf-mould. It is necessary that the soil in which all similar seeds to these are to be sown should be light, otherwise the roots of the young plants get much injured when they have to be transferred to single pots. Make the surface quite smooth and sow the seeds thinly, covering them with about an eighth of an inch of fine soil; they will germinate in a greenhouse temperature, but more quickly if the heat be somewhat increased.

Pits and Frames.—Primulas and Cinerarias should now be sown in pans, drained, and filled with light sandy soil; sprinkle some sand over the surface, which press even with the bottom of an empty flower-pot, then gently water it so as to close up the interstices into which the seed would otherwise be liable to get washed too deeply by subsequent waterings. The Cineraria seed may be slightly covered with a little sand, again pressing the surface smooth; until they have germinated do not give more water than will just keep the soil in a somewhat moist condition. The Primula seeds should be slightly pressed into the surface so as to be partially embedded, but they succeed better without being covered further than by placing a sheet of glass over the top of the pot to prevent the surface from drying, thereby avoiding the application of water, of which the less needed the better until the plants are up. Place the pots at the bottom of the frame or pit so that the sun will not absorb the moisture from the soil. A temperature of 50° or 60° during the night will be sufficient. If the plants be well attended to throughout the summer, never allowing them to get checked for want of water or pot room, they will flower as early as required. Tomatoes that were sown recently will now be ready for potting off; place them singly in small pots, water and shade them until the roots have got hold of the soil, after which they cannot have too much light to keep them in dwarf and vigorous growth. Melons sown to occupy the frames which will shortly be cleared from bedding plants, should, as soon as they require it, be moved into larger pots, in order that they may not get stunted before the frames are ready for them. Hot manure should at once be got together in sufficient quantity, and thoroughly prepared for making up the beds by frequent stirrings.

Bedding Plants.—Continue gradually the hardening process, so as to have them in a proper condition at planting-out time: in the interval the beds should be made ready. Where spring bedding is made a feature in the garden, it is frequently perplexing which to sacrifice—the springor the summer bedding plants—especially at such a season as the present, when the spring plants are at their best; but it must be borne in mind that if the summer bloomers are not put out in the beds at the proper time they have little chance of making a prolonged display, and, when not planted until late, the autumn frosts are upon them soon after they have become effective. The beds that are to be filled with the more tender sub-tropical plants that should not be planted out before the beginning of June, or such as are to be filled in carpet style, where Coleus and Alternantheras hold a conspicuous place, can of course remain with their spring-flowering plants undisturbed. In moving all that are more immediately in the way, the place in the reserve ground that they are to occupy should first be prepared by digging it well, and if the soil be poor add some manure to it; by this means there will be no delay in transferring the plants from one place to the other. Give all a good watering as they are placed in their summer quarters, and those that are larger than required, or are found necessary to increase, should be divided. In preparing the beds for the summer plants, it is necessary to treat them according to the requirements of the various subjects to be introduced. Such as Ageratums, Verbenas, and Calceolarias, or others of a similar quick-growing nature, need a much richer soil than Pelargoniums, which latter, if put in ground that is over-rich, will run too much to leaf. Quick-growing plants like the former require a quantity of food, and if the soil be not rich enough they are slow in covering the ground, and are not able to continue growing and flowering to the end of the season; but with these, as with all other plants that need considerable sustenance, it is much better occasionally to introduce some new soil than to rely upon manure alone. This recommendation specially applies to Calceolarias; one of the chief causes of failure in these is their being placed in beds that have year after year been occupied by them or other plants of a similar nature, the soil becoming exhausted of the elements necessary to sustain them, and which are not supplied by manure alone. Remove 6 in. of the effete soil, and re-place it with that of an ordinary pasture, and great benefit will result to the plants. Where manure is required, particularly if the soil be of a dry light nature, well-decomposed cow manure is much preferable to horse manure, as the former is more cool and moist, and will keep the plants through a dry season in better growth.

PLATE XVIII.

CLEMATIS VESTA.

Drawn by H. HYDE.

In giving a coloured figure of Messrs. Jackman's Clematis Vesta, one of the most beautiful, if not the most showy, of the newer kinds, we take the opportunity of alluding to some of the more valuable of the recent novelties, including Vesta, raised by that firm, which has been so successful with these superb hardy flowers. Foremost amongst the kinds belonging to the C. patens type, which consists of climbing large-flowered spring-blooming Clematises that flower from the old or ripened wood, we find Fair Rosamond, a blush-white kind, with a somewhat indistinct wine-red bar up the centre of each sepal, the stamens being very prominent and distinct. This flowers in May and June. Then comes John Murray, a remarkably free-growing and free-blooming variety. Its flowers, which are eight-sepaled, are of a deep purplish-mauve, becoming reddish towards the base of the bar. This is a very showy kind, somewhat intermediate in season between the spring and summer varieties. Lord Derby is another free-growing and abundant flowering variety of the C. patens type. Its buds are large, erect, and woolly, a good deal resembling those of C. lanuginosa, while the flowers, which are eight-sepaled, are of a pale lavender or bluish-mauve colour; the sepals very much overlap, so that the flower is remarkable for its fulness. The anthers are reddish-purple, and the filaments white. Lord Mayo also belongs to the C. patens group, and, like the rest of that type, is furnished with ternate leaves. Its flowers, which are about 5 in. across, consist of eight elliptic-oblong sepals, of a deep rosy-lilac colour, becoming darker towards the base in the central bar, which is well marked; the stamens have white filaments and long deep chocolate-purple anthers. The flowers are sweet-scented. Sir Garnet Wolseley is another striking variety of the C. patens or early spring-flowering group. The leaves are of the usual ternate character, with ovate leaflets. The flowers, which are very distinct and attractive, are nearly or quite 6 in. across, of a slaty-blue ground colour, having in the young state a very effective dash of bronze, and in the matured condition a showy and distinct bar of plum red, relieved by the tuft of white stamens tipped by dark purple anthers. Stella has flowers of a light violet or deep mauve, with a distinct bar in the centre of each sepal of a deep reddish plum colour; the flowers are delicately scented. The Queen has flowers of a delicate lavender or mauve-like tint, having much the appearance of moderate-sized blossoms of C. lanuginosa. C. Vesta is, as will be seen, a marked acquisition as an early-blooming white variety. Its leaves are ternate with elongate ovate acute leaflets. Its flowers, which are of large size, are remarkable for their fulness of outline, measuring 5 in. across, and consisting of eight or more spreading sepals. It has conspicuous tufts of purplish stamens, with white filaments, which set off the flowers to great advantage, and it has a well-marked but delicate Primrose-like fragrance. It has been awarded a first-class certificate both by the Royal Horticultural and Royal Botanic Societies. In the C. florida group, which consists of climbing summer-blooming kinds that flower from the old or ripened wood, the newest and most striking variety is Countess of Lovelace, a vigorous-growing sort, superior even to John Gould Veitch, both in habit, colour, and form. Its leaves are ternate, with broadly ovate leaflets; its flowers have sepals of a bluish-lilac, forming a guard to the flowers like the guard-petals of a Hollyhock, within which is a rosette of smaller sepal-like bodies, which are of a deep bluish-lilac to the base, forming a full double flower; in the centre is a tuft of white filaments and yellow anthers. It has the peculiarity of the flower-stalks being pendent, while the blossoms themselves turn upwards, and are thus shown off to the best advantage. It is one of the best of its class. In the C. lanuginosa type, which consists of climbing large-flowered summer and autumn blooming kinds, that flower successionally on short lateral summer shoots, the following are the best, viz.:—Mrs. Moore, a variety belonging to the intermediate group; its leaves are deeply cut, with rather large ovate leaflets; its flowers are remarkable among the mid-season varieties for their size, measuring as much as from

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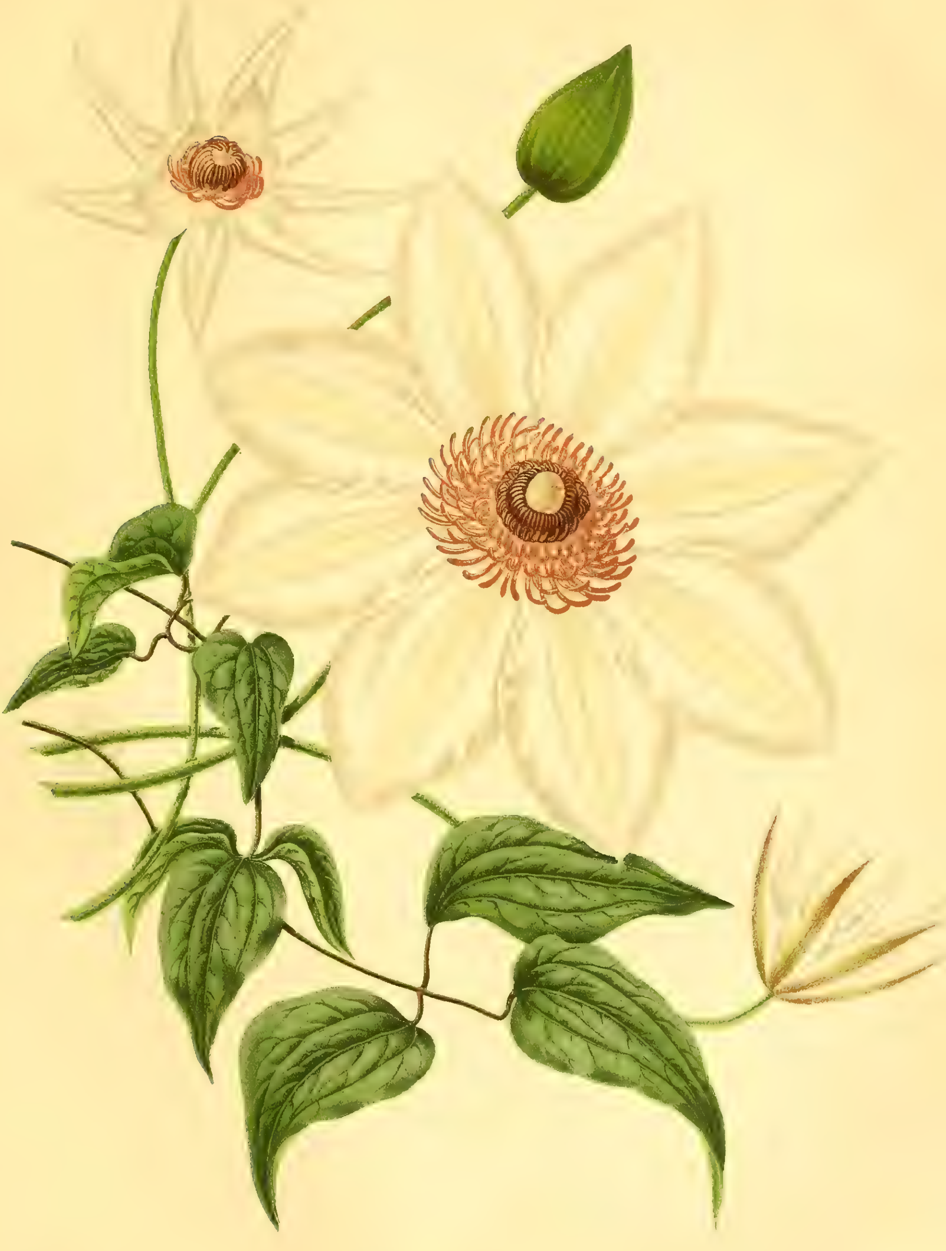


CLÉMATIS VESTA (HORT)

8 in. to 9 in. across; the sepals, six in number, are white, showing in the young state a slight mauve shade along the bar. The other is Beauty of Surrey, a handsome hybrid. Its flowers are of a light greyish-blue colour, which render it an admirable plant for contrasting with those having flowers of a dark hue. It has been described as a great advance towards a bright blue summer Clematis. In the C. Jackmanni type, which consists of climbing, mostly large-flowered, summer and autumn blooming kinds, flowering successionally in profuse continuous masses on summer shoots, Lady Stratford de Redcliffe is an improvement on some of the older varieties. Its flowers, which are eight-sepalled, measure fully 6 in. across, and are of a delicate mauve colour with a greenish tint in the centre bar or rib; the anthers, which are at first chocolate-red, soon become grey. Of this, and others of the Jackmanni group, striking beds may be made in the flower garden.

As regards culture, where it can be provided, a rich soil of a light loamy texture is the best for Clematises, and if this be mixed with chalk or lime, so much the better. Thorough drainage is indispensable to good healthy development; and the vigour of the plants must be kept up by at least annual manurings with horse or cow manure. On dry hot soils, cow manure would probably be preferable, while on heavy soils a thorough dressing of good leaf-mould would be beneficial. Mulching in winter also increases the strength of the plants and the size of the flowers. Pruning is an important point. That of the varieties belonging to the Montana, Patens, Florida, and Lanuginosa types should take place in February or March, and should consist in removing all weak straggling or overcrowded branches. In some of these types the plants flower from the old or ripened wood; therefore, to secure blossoms, the strong one-year-old wood should be trained in, as far as it has become thoroughly ripened, beyond which it may be cut away, the retained parts being so disposed as to fill up all vacant spaces. The varieties of the Viticella and Jackmanni types are mostly large-flowered summer and autumn blooming plants that flower on the young or summer shoots. which latter should be cut cut back each season, as soon as the frosts have disfigured the plants, say in November, to within about 6 in. or so of the soil.

Bare Shrubbery Borders.—There are now acres of bare, ugly, dug borders in the parks of London. This practice of digging old shrubberies is as injurious to the trees in London as the smoky atmosphere, for most of the roots in the best part of the soil are thus annually destroyed. It is even more destructive to herbaceous plants, many of which thrive well in London in ordinary soil if let alone. All these acres of bare surface might at this season be alive with beautiful hardy flowers, and the trees and shrubs be all the better for the ground not being dug for years at a time. Dressings might, of course, be added where needful, and weeds would have to be kept down. We know that the practice of digging annually is an old and well-established one, but trust the various superintendents of our public parks will not, for that reason, let the evil continue. In the parks about London, the shrubs are frequently trimmed like fighting cocks previous to the digging being done, and this annual clipping of the tops as well as roots produces a miserable result in the end, as anyone may see in many parts of the parks. It is surely a pity that the labour thus wasted is not directed to the proper culture and development of each species as far as position and circumstances permit. Why should we not have specimen Lilacs instead of scare-crow Lilacs in our parks? and so of other trees. Where they are let alone on the turf, the result is often as good as could be desired. Our public parks are now becoming important gardens, and we appeal to the various able superintendents to give this subject the attention which it deserves. A shrubbery is as well worthy of proper culture as anything else, and all garden plantations should be made to express the highest beauty of which the plants are capable, considered as to their general effect or as to the beauty of individual kinds. It is right to add that while there is as yet too much of the evil we point out in Battersea as well as in other parks, there are in it signs of improvement in this respect. By several of the walks we may see good specimens of shrubs mutilated neither above nor below the ground, and there is evidence of a desire to regard hardy shrubs as living things planted for their beauty, and to treat them accordingly.

GARDENING FOR THE WEEK.

Stoves.

Now that the sun has so much power fires should be kept in abeyance so as to have as little artificial heat as possible during the day. Keep the pathways and other available places well damped, that the atmosphere may at all times be sufficiently charged with moisture to maintain the plants in a healthy vigorous condition. The ventilators should be closed early to shut in the sun-heat and so raise the temperature 15° or 20°, which, if accompanied with a good syringing, will be of material assistance in promoting free growth and holding insects in subjection. Where climbers are grown and trained to the roof, frequent attention will now be requisite in thinning and regulating them that they may not obstruct the light and air from the plants beneath them.

Bougainvilleas.—That most useful of all stove climbers, Bougainvillea speciosa, will now be everywhere gay with its lovely mauve-coloured bracts, to which, in their young state, green fly is particularly partial. The excreta these exude soon disfigure the flowers so much as to render them of little value, and therefore, to make sure of having them clean and perfect in form, the house should be fumigated whenever they make their appearance. Avoid syringing or wetting the coloured leaves, as, when that is done, they soon fade and lose much of their beauty. Rub out any strong gross shoots as soon as they show themselves, leaving only such as are of medium size to replace those now blooming. B. glabra is of equal value, and comes in well to succeed the above. Keep the shoots of this freely thinned-out to admit plenty of sun and air among those remaining, otherwise they do not flower in a satisfactory manner. Any that are growing in pots for exhibition or general decorative purposes should be stationed well up to the light and fully exposed to the sun, keeping the shoots thinned, tied, and regulated as growth proceeds. The propagation of autumn and winter-flowering plants ought not to be longer delayed, or the season will be too far advanced to afford time for growing them to a serviceable size.

Poinsettias are first in importance for the above purpose, and cuttings of these should now be made either from the ripe wood or the young growth taken off with a heel. If by the former method, pieces about 3 in. long, that are hard and short-jointed, suit best for the purpose. These should be inserted in sharp sandy soil sufficiently deep for only the top bud to remain visible, and then placed in a brisk bottom-heat, where they will soon start into growth. Single eyes with half-an-inch or so of wood attached to each end strike just as readily, and make strong plants with single stems that are sure to carry fine heads of their splendidly-coloured leaves. For general purposes, these are perhaps the most desirable; but where larger sizes are required, a portion of the old plants must be cut back to within a few inches of the pot, and then started to grow. As soon as the shoots are half-an-inch long, shake out the plants from the old soil, and re-pot in good fibry loam, after which place them in bottom-heat for a few days to give them a start. If kept far from the light they soon become drawn, and therefore directly the roots are on the move the plants should be placed on shelves close up to the glass, where they will obtain plenty of air and a temperature ranging between 60° and 70°, in which they will make good stocky plants. Poinsettias are rather subject to red spider, especially if they are allowed to get dry at the roots, or are grown in a house that has not a sufficient amount of moisture in the atmosphere. To preserve them in health and free from such pests, syringe freely among the leaves and pots every morning and evening whenever the weather is bright and clear. P. pulcherrima has now a formidable rival in the new variety named plenissima, to be sent out by Messrs. Veitch in May, and to which the old favourite will shortly have to give place. This has all the good qualities of P. pulcherrima, with the additional merit of having the coloured bract at least double its size, so that the effect a few well-grown plants of this species will produce may be readily imagined.

Sericographis Ghiesbreghtii comes next in order of merit, as a winter-blooming plant, and should be grown in quantity where a constant supply of flowers has to be kept up at that season. Cuttings put in at once may be grown to useful-sized plants by the autumn if placed in gentle moist heat for a time, and potted on as they require it. Any old plants that have been saved should be pruned back and plunged in bottom-heat to induce them to break freely, after which they should be shaken out and re-potted as recommended for Poinsettias. Fibry loam, with a little peat or leaf-soil and sand, is the best material to grow them in, and when they get well hold of it, nip out the points of the shoots to force them to start again, in order that the plants may become well furnished below. The Sericographis will stand in a temperature of 50° to 55° in a dry atmosphere during the winter, and will continue in great beauty for at least three months.

Rivina humilis.—Where plants for table decoration are required during the winter there are few better subjects for the purpose than Rivina humilis, grown either as standards or in the bush form; standards having clean stems about a foot high, carrying round symmetrical heads, laden with racemes of their rich glossy scarlet berries, are exceedingly effective. Seedlings are best for the purpose, as they can be quickly run up to the necessary height, and are less inclined than plants raised from cuttings to branch out from the stems. The Rivina is quite an all-the-year-round plant, as it may be had in perfection at any season, by simply resting a few, and then starting them into fresh growth by pruning them in and re-potting. Where bush plants are required, cuttings are best for the purpose, as they are naturally more pendulous than seedlings and hang over the edge of a vase in the most graceful manner; 4-in or 6-in. pots are quite large enough to grow them in, as they are most persistent rooters, and will feed and do well on the commonest fare. To enable them to flower freely and set their berries, they should be placed on shelves, or in some light, airy position, and be well supplied with water.

Ardisia crenulata is likewise well adapted for similar purposes to that of the Rivina, and when well grown with a profusion of its Holly-like berries depending from the ends of its branches, it has a very pleasing appearance. Plants with single stems are preferable to any others, and these also are best raised from seed. To keep up a supply of suitable size it is necessary to grow a few fresh ones every year, discarding a similar number. The Ardisia is very liable to scale, and the plants should therefore be frequently looked over and cleaned.

Scutellaria Mocciniana should be extensively cultivated, as it is one of the most useful decorative plants it is possible to have, and a great improvement on the old S. macrantha that used to be so highly prized. The flowers of S. Mocciniana are at least double the size of the latter, of rich velvety texture and most brilliant scarlet colour suffused with a shading of yellow at the tips, which renders it very attractive. Any one fortunate enough to have old plants of this species should cut them back at once, unless they are well furnished with young wood at their base, in which case stop the ends of the shoots to induce them to break again and make a good bushy growth. Cuttings put in now will soon root and form stocky plants if stopped occasionally and grown on in strong moist heat. A light rich soil, such as loam and leaf-mould with a little thoroughly decomposed manure, is the best in which to grow them so as to push them on quickly out of the way of red spider, to the depredations of which insect they are very subject; to cope successfully with these insect-pests the plants should be grown where there is plenty of atmospheric moisture and be well syringed overhead, in addition to being properly supplied with water at the roots, which should never be allowed to become quite dry.

Begonias are a most useful class of plants both for summer and winter decoration, but for the former purpose, the stove varieties are now superseded by the many beautiful greenhouse kinds sent out within the last year or two, a few of which should be in every garden. If tubers of these be obtained at once and started in any cool house or pit, they will flower in June, and last in perfection till October. For winter blooming, B. fuchsioides is one of the best, either for table decoration in 6-in. pots, or for its cut blooms in epergnes or flower vases, for which its gracefully drooping habit renders it especially adapted. B. semperflorens Saundersi somewhat resembles the above, and as its name implies, is a continuous bloomer, a habit that renders it a very desirable variety to cultivate. B. nitida is likewise a fine old kind that should be in every stove, as it affords quite a different shade of colour and may be had in flower at almost any season. B. manicata is quite indispensable for the winter, either as a pot plant or for cutting purposes, as a few sprays of this introduced among other flowers impart to the whole a most pleasing and finished appearance. Cuttings put in now will make plants sufficiently large for ordinary purposes, but if extra sizes be required, a few old ones should be kept for the purpose. To get Begonias to flower freely and keep them dwarf and stocky, they should be grown in positions where they can get light and air. Good turfy loam and 6-in. pots will suit to grow them to perfection, if well supplied with water during the summer.

Ananassa sativa variegata is most valuable as a decorative plant, and one that will stand in almost any position during the summer without injury. For table decoration, associated with Dracænas or plants of that class, it is exceedingly effective. For the development of its rich leaf-markings in the highest state of perfection it is capable of attaining, an abundance of light is necessary. The plants should therefore be placed well up to the glass and fully exposed, except just for an hour or two during the brightest part of the day. Six-in. pots are quite large enough for them, as they require but little room, and are more serviceable in that size than any other.

Pandanads are most useful plants as single specimens in vases, or as a decoration for the dinner-table, a purpose for which they are eminently suited, owing to the gracefully re-curved form of the leaves and the light elegant appearance they present. The smaller forms, such as P. javanicus variegatus, Veitchii, and ceramensis, are best adapted for such positions, but each should be confined to a single stem, instead of being allowed to throw out suckers, which greatly detract from its beauty. Any old plants with suckers should have them pulled off with the roots attached if possible, for the purpose of growing in small pots, and to be used for table decoration when properly established. These, like the Variegated Pine above alluded to, require abundance of light, and should receive similar treatment.

Curculigo recurvata variegata is a plant of noble aspect, having Palm-like foliage that renders it exceedingly ornamental; and as it will thrive in moderate heat, it is doubly valuable. Even the green form, C. recurvata, is worth growing for decorative purposes, and has a grand effect among Ferns or Dracænas, with either of which it associates well. For table decoration and similar purposes, it perhaps looks best when grown in 6-in. pots and the plant confined to a single crown, as then its gracefully arching leaves are seen rising from its base, and show off to great advantage. To have them of this character, any old ones should now be divided, and the young suckers taken off with as much of the root adhering as possible, potting them afterwards, and placing them in close heat for a successful start. These, if hardened off by-and-by, will be found exceedingly useful for the autumn and winter, to occupy positions where it would be unsafe to risk subjects of a more choice or less hardy nature.

Vincas are among the most useful of summer-blooming stove plants, and should now be growing freely. To insure dwarf bushy plants, let them have abundance of light, and nip out the points of the shoots to induce them to break back and become properly furnished. Any regulating or training that may be necessary should be done during the earlier stages of their growth, so that when they get into bloom they may lose that appearance of stiffness which is so objectionable in plants freshly tied. Vincas are rather gross feeders, and should therefore have a rich soil in which to grow, such as a mixture of fibry loam and well-decomposed leaf-soil, in the proportion of two-thirds of the former to one of the latter, with sufficient sand to keep it open. As established plants of these fill their pots with roots, they should be assisted occasionally by giving them weak manure-water, made from sheep manure with the addition of soot, which always imparts a rich deep green healthy-looking appearance to the leaves of any plant to which it may be applied in the above manner.

Cocos Weddelliana.—Where plants are in much request for table decoration, Palms are almost indispensable, and none are more light and elegant in appearance, or so well suited in every respect for the above purpose as Cocos Weddelliana, a perfect gem among the aristocrats of vegetation. Unfortunately, the majority of other kinds soon get too large for table embellishment, but by keeping these confined to 6-in. or 8-in. pots, they may be preserved in perfect health for at least a couple of years, if well supplied with water at the roots, of which at most times they enjoy rather liberal supplies. Areca lutescens is a Palm of remarkably graceful habit, and comes next in order of merit to the above, and as it will stand in a cool stove or moderately warm greenhouse, it is a very desirable variety to cultivate. The yellow stems of this show in pleasing contrast with its delicately pale-coloured leaves, and give the plant a very striking appearance. There is one advantage in growing Palms for table decoration independent of their great beauty and general suitableness for the work, and that is, they are constantly increasing in value for other purposes, such as the decoration of conservatories, halls, &c., for which no plants are more suitable or better adapted in every respect.

Caladiums have proved to be exceedingly useful for dinner table decoration during the summer months, but to get them to stand without flagging they must be prepared some time previously to being required. If allowed to stand in bottom-heat, or in a close damp atmosphere, they soon droop when exposed to the air of a room, and therefore, when of a sufficient size, they should be gradually withdrawn from it and placed in positions exposed to light so as to stiffen their stems and harden the foliage. Some of the more recent introductions, such as Prince Albert Edward and others of that class, having thick stiff Alocasia-like stems, are better adapted for the purpose than most of the older varieties, and should therefore be grown in preference, except it were to replace such delicately beautiful kinds as C. Belleymei and C. argyrites, two that are always special favourites. Those that are confined to small pots, or are getting well advanced in growth with plenty of leafage, will now require liberal supplies of water, and a good syringing overhead when closing the house in the afternoon. Caladiums often receive more shade than is really necessary or desirable, as they are never so useful for standing in other positions out of the house in which they have been grown, as they are when they get more exposure to light, plenty of which is necessary to bring out and fully develop the beautiful leaf-markings for which they are so generally esteemed.

Campsidium, or Cupania filicifolia, is a very elegant-habited plant, having beautiful Fern-like foliage, borne on light fragile stems, that give it a very graceful and pleasing appearance. This is well adapted for table decoration, and especially for baskets, or cut blooms for epergnes or tall vases of flowers, to hang down over the sides, in which position it is very effective. Old plants cut back will soon start again, when the young tender growth should be taken off with a heel and struck in close moist heat to grow on for either of the above purposes. One or two planted out where they can have room to spread will afford abundant supplies for cutting, a purpose for which they are so highly prized.

Conservatory.

Camellias are likewise moisture-loving plants, especially while carrying their bloom and making their growth, which latter process they are in most cases now going through. It will, therefore, be necessary to water freely, so as to make sure of soaking the whole of the soil, otherwise the lower roots will suffer, and perhaps perish through lack of moisture, while the surface gives indications of being in proper condition. Dryness at the root is a frequent cause of Camellias shedding their buds, and therefore from now till the autumn it will be necessary to watch them closely to prevent them from getting into that condition. To assist them in starting their buds and to make a free, vigorous growth, they should be kept well syringed overhead every morning and evening, and a moist state of the atmosphere maintained during the day by damping the floors and other available parts of the house. Maintain a gentle, steady heat by closing early in the afternoon, by which means fires will not be required. Camellias object to strong sun-light, especially at this season of the year, and suitable shade is of the greatest importance in keeping the temperature regular and the air of the house in an equable state as to moisture.

Rhododendrons.—Among plants that should take a foremost position for conservatory decoration at this season of the year, the many beautiful varieties of hybrid Rhododendrons may be classed as the most showy and useful. The greater part of these come naturally into bloom in March and April without the aid of artificial heat, and are doubly valuable on that account. R. jasminiflorum is a perfect gem, and for spotless purity almost rivals the Stephanotis, the flowers of which it greatly resembles, except that they are even more waxy-looking and beautiful. The long stout tube and the great substance of the flowers render them of great value for bouquet making, for which their form and small size are well adapted. It is a plant that cannot be too extensively grown for the above purpose, and one whose merits it is impossible to praise too highly. Princess Royal resembles it in form, but has more colour, and is a good companion plant to cultivate with it. Princess Alice is a noble variety, having flowers almost as large as R. Edgworthii, and of great substance, which ensures them lasting a long time in perfection. The colour of the flowers is white suffused with pink on their outer surface; and, in addition to the above qualities, it is deliciously fragrant. Princess Alexandra is likewise a free-blooming handsome kind, well adapted for conservatory decoration. Countess of Haddington has fine large blush-white flowers, and a dwarf, compact, free-flowering habit that renders it a very desirable variety to cultivate. R. fragrantissimum, as its name implies, is very sweet-scented, and partakes of the shrubby habit of R. Gibsoni, from which it was raised, with the delicious fragrance of R. Edgworthii, the pollen parent. Any one requiring really serviceable plants cannot fail to be satisfied with the above, which, if accommodated after the manner of Azaleas, will grow and bloom with the greatest freedom. These, with a few hardy hybrid varieties that may be lifted and potted when set with bloom buds, will go far towards rendering the conservatory gay with flowers, and take the place of Camellias. All that the choice hardy kinds require is some slight protection to any young tender growth they may have made while standing in bloom under glass, as when they are turned out too early they are apt to be injured and thrown back for a year.

Solanums.—As these become shabby from their berries shrivelling or the leaves falling from them, they should be cut well back, and have their branches thinned out, to give the necessary room for the young ones to take their place. Solanums will stand some amount of frost without injury, and they may therefore with safety be planted out at once. Choose a situation fully exposed to the sun, but so that they can have shelter from strong winds usually prevalent towards the autumn—a time when they are little able to bear it from being so heavily laden with their ornamental berries. Planted out, they do not require a tithe of the labour as when grown in pots, while their capacity for blooming and fruiting is increased at least tenfold. The soil in which they are planted ought not to be rich, as when that is the case the plants are driven too much into growth, and fail to produce flowers in sufficient quantity to give them a full crop of berries. Young plants raised from seed or cuttings during the spring should be pushed on in gentle heat for some time to come, in order to get them as strong and large as possible before planting them out.

Richardia æthiopica is a most valuable subject as a decorative plant for winter, viewed either as regards its foliage or the numerous highly ornamental flowers it sends up. No place should be without a good stock of these, and now is a good time to divide and increase them, as each stem or crown will afford a separate plant. Secure with each piece as many roots as possible, and pot separately in light rich soil, after which place them where they can receive a moderate amount of heat for the purpose of giving them a start for their future planting-out. Plants already established may be turned out at once so as to give them a long season's growth, by which means they will produce a continuous supply of flowers all through the winter. If planted in shallow trenches, something after the manner of Celery, they can be easily watered during the summer, as, from their half aquatic nature, they take large supplies, and cannot be overdone in that respect. In preparing the trenches give a good dressing of half-rotten manure and place the plants 2 ft. apart, which will afford the necessary room for them to grow and acquire great strength of leaf-stem. Mulch over the surface with some light littery manure for the purpose of shading the roots and preventing evaporation, thus saving much labour in watering, besides keeping the plants in a more uniform state as to moisture. Richardias do well planted in shallow water, and are exceedingly ornamental in ponds or basins of fountains, positions for which they are well adapted. If planted or placed in pots so as to have their crowns about 3 in. beneath the surface of the water they will stand the winter and break up again from below. Any spare plants may therefore be advantageously employed for embellishing the above-named places, and so made to serve a useful purpose.—J. Sheppard, *Woolverstone Park.*

Orchids.

Examine baskets and blocks, beginning at one end and going through them, replacing them in such a way that the plants may not occupy the same positions that they did before; thus treated the plants themselves will be benefited, and they may be so arranged that those on the stages below which had plants hanging over them before shall be relieved; hang as many of the baskets and blocks as possible over the pathways, a row on each side so that the drip may not fall on the staged plants. Clean the plants by means of a sponge and some rain-water, unless they are infested with insects, in which case a little weak tobacco-water should be used. Re-basket any that may require it, and, in the case of others, work out the old material and re-place it with new. Take care that none of the leaves rest against the wire, as this will injure them, more particularly if the wire be not of copper, which is the only good wire for Orchid-baskets. Attend to the night temperature, and in the case of any of the houses in which it cannot well be kept down leave a very little top air on; this will rather benefit the plants than otherwise. It is surprising that so little attention is paid to the night temperature, for if it be allowed to get too high when the plants should be inactive, it injures them. Attend to cleaning and potting as directed last week, looking well after such plants as may have thrips on them; sponging them frequently with weak tobacco-water, one cleaning being of little use, as the young thrips soon reappear. See that no rubbish accumulates in any part of the house, for, if allowed to do so, it will harbour insects. Be careful in watering, using rain-water only for the purpose, and giving it to the plants in such quantity as the state of the growth may warrant; be careful, too, to prevent the water getting into the hearts of the young shoots. On cloudy mornings, when the sun peeps out only for a time, ventilate in order to keep the temperature right, and sprinkle the floors rather than let the blinds down, until you see if the day is to be sunny or not. Temperatures as given last week.—James O'Brien.

Hardy Fruits.

Notwithstanding the inclemency of the weather and the sharp frosts of the 13th and 14th inst., accompanied by the heaviest fall of snow we have had in this district at any one time for years past, fruit trees do not seem to have suffered materially, and, as yet, there is every prospect of a good fruit season. Apricots, however, have disappointed our hopes, and will be a very poor crop, for, although they bloomed profusely, many of the blossoms lacked vigour, a circumstance doubtless attributable to the immature state of the buds by reason of the excessive wet and sunless weather of last autumn. However, though there is likely to be but a scanty return in the shape of fruit this season, the trees must not be neglected on that account, as such a proceeding would also prove fatal to next year's crop; give them the same attention as if they were full of fruit. Keep a sharp look-out for the leaf-rolling caterpillar, which is specially injurious to Apricots, and if not taken in time will soon strip a tree of its leaves. I know of no remedy for its extirpation other than hand-picking, and this is never a very formidable task, as, if taken in time, an examination of the trees twice or thrice suffices to keep them in check the whole of the season. Pinch the new growths to two or three eyes, and rub off foreright and other misplaced shoots; any young branches that are being trained up, if growing too vigorously, should have the points taken out, it being always desirable to equalise the flow of sap over all parts of the tree. Disbudding of Peaches and Nectarines can no longer be delayed without causing serious injury to the trees. My constant recommendation is that it be accomplished early; but if it have been delayed until the shoots are, say 4 in. long, I suggest that no disbudding whatever take place, but that in lieu thereof the shoots be shortened back to one eye or joint; innumerable fruit spurs are thus formed, and the growth of young wood is not nearly so vigorous but more fruitful. I have practised a modification of this plan for some time, and am well satisfied with the results. Thin the fruit as soon as the swelling can be discerned, and keep in check aphides by frequent syringings with soapy water, which should always be applied early on the mornings of fine days. Currants and Gooseberries are exceedingly well fruited this season, and blue aphides on Currants, and caterpillars on Gooseberries, will probably soon put in an appearance; the former may be got rid of by washing with clear water, or, what is preferable, soap-suds, which should be applied with some little amount of force—as through a syringe or garden engine. For caterpillars no better method of riddance has yet been invented than hand-picking; a good preventive is to strew the ground beneath the trees with tanners' bark or quicklime. The cuttings of these that were recommended to be put in some time back should now be gone over for the sake of rubbing off all shoots or eyes, except two or three at the top; by this means nice clean stems are insured, which look, and indeed are much better than if the trees were allowed to branch out immediately above the soil; if through any cause they have become loosened, the ground around the base should be well trodden, otherwise they cannot root or make satisfactory progress. In fine weather surface-hoe amongst all kinds of fruit bushes, to prevent the growth of weeds. Recently planted trees should be mulched, for after so much wet, as soon as dry weather sets in the soil is sure to crack, and this mulching assists to neutralise the bad effects that would otherwise ensue.—W. Wildsmith, *Heckfield.*

Almonds.—In your remarks of last week (see p. 383) you do not mention the so-called Jordan Almonds of commerce, which are very largely exported to this country from Malaga, in Spain. They are the large kind eaten with Raisins at dessert, and are infinitely superior to all other Almonds with which I am acquainted. The finest brands sometimes fetch here as much wholesale as from £14 to £16 per cwt. Large quantities of shelled Almonds are sent to England from Barbary, and a few from Sicily, in addition to the shell Almonds from France. Altogether the Almond trade is an important one. The few kernels that ripen on London trees are often of excellent flavour, and if later-flowering kinds were grown here there is no reason why we should not have good crops of Almonds. It is strange that the Almonds eaten green in France and Italy are not imported here, as they form a delicious fruit, and would readily bear the short journey, even if we could not grow them ourselves. It is stated, but I do not know whether truly or not, that it is not known when Almonds are sown whether the fruit will prove to be sweet or bitter, and that the seeds from a sweet tree will often produce bitter fruit. If true, this fact is singular, but not more so, perhaps, than that some flowers of the same kind are scentless and others highly scented—Cyclamens being a case in point.—P.

Influence of Light on Grapes.—In the March number of "The Gardener" the editor remarks that while Lady Downe's Grape has usually a thick skin, and is deficient in flavour, yet when grown under the influence of as much light and air as it could possibly be subjected to in this country, in a large house, with a maximum of glass and a minimum of woodwork, the Grape in question assumes a thin skin and an excellent flavour; in fact, becomes a rich sweet Grape, with comparatively a thin skin devoid of toughness.

VEGETATION IN AUSTRALIA.

Australia is a world by itself as regards vegetation, a lovely world of strange trees and blossom-laden shrubs. Often, when one kind monopolises large tracts, a kind, perhaps, not even furnished with a green leaf, the effect is monotonous to a depressing degree. Many of the trees, if distinguished for their stature or the value of their timber, are not so remarkable for the beauty or brilliancy of their blossoms; but many, on the other hand, are of surpassing loveliness and grace. Acacias alone are a garden of beauty in themselves—fountains of gold, and often with leaves like delicate Ferns. Full-grown Acacias, in all their glory of blossom, must be amongst the handsomest trees that grow. We have seen them in the gardens round San Francisco Bay, where they grow well, and also in Southern Italy, where some form medium-sized trees, but in their native land they are doubtless much finer. In our gardens we rarely get an idea of what an Acacia really is, seeing them in pots and trained as pillar plants. Many who train the delicately-cut A. dealbata over a trellis have little idea of what it is—a well-furnished tree, 30 ft. high, smothered in blossom; and of the magnificent Gum trees we have still a smaller notion. We have never even seen photographs of the enormous trees described by Baron Mueller as larger than the Sequoias of California, and consequently probably the largest trees in the world. We have, however, seen many young Gum trees growing in a climate really suited to them (California), and, except the Birch, we have not seen any other trees equal to them for the grace of the growing shoots. Numbers of Australian plants are found quite at home in many parts of the northern world, happily for those who have gardens on the Mediterranean, and in many other regions. What a precious art is that which enables us to enjoy in Europe or Northern America much of the beauty of the Australian tree world! Australian vegetation is not so often praised for its luxuriance as that of other lands. Mr. Charles Moore, of the Sydney Botanic Gardens, informs us that in the mountains gullies sometimes are seen wherein the effect of a rich growth of tree Ferns, intermingled with other types of vegetation, is as richly beautiful as any aspect of vegetation to be seen in tropical lands: such a scene is that shown in our illustration.

The Dracæna as a Berry-bearing Shrub.—Hitherto Dracænas have been valued for their leaves alone, but Mr. Wills (says the "Gardeners' Magazine") has made a tremendous stride, not only in raising a new race, but in demonstrating the splendour of the plant when smothered with fruit. When recently looking over the nurseries at Anerley, we saw many large Dracænas profusely laden with berries in various stages of development, in some cases quite green, in others fully ripe, and of a rich deep purplish-red colour. Here is a new feature for enterprising cultivators, and one that has a considerable attraction for such as aim at exhibition honour, for a group of well-berried Dracænas would make a sensation, and to produce a crop of berries requires both skill and patience. The time of year at which the berries usually ripen is from late autumn to the turn of spring, but in a place where a large number of plants are grown they might be obtained at almost any season of the year. A few of the autumnal schedules have classes for berry-bearing shrubs, and we find in the competitive groups such plants as Ardisias, Rivinas, Skimmias, and Solanums, but henceforth we shall hope to see Dracænas also, and no one better than Mr. Wills could show the way to success.—S. H.

Sparrows and Horse Chestnut Buds.—I have read some accounts in the "Field" of sparrows destroying Crocuses, but have not observed it in this part of the country. However, last week, I "caught them in the act" of a much more serious destruction. Within ten yards of my window stands a Horse Chestnut tree, which during the first week of this month made rapid progress, the buds being 2 in. to 2½ in. long, but as yet unopened. Owing to frost, snow, and cold weather during the last week, it has remained unchanged, with the exception of the buds being browned—by the frost, I presume. Well, last week I discovered numbers of house sparrows, which take shelter in an Ivy-covered wall close by, attacking the buds: their mode of procedure was to nip off two or three leaves, let them fall on the ground, and then to take one peck from the inside of the bud, which seemed to satisfy them with that particular bud, as they forthwith commenced upon another.—Charles W. Cowan.

ASPECT OF VEGETATION IN THE MOUNTAINS OF AUSTRALIA.

TREES AND SHRUBS.

DENDROPHILIA:

OR NOTES FOR PLANTERS, ESPECIALLY ON EXPOSED SEA-COASTS.

By SALMONICEPS.

(*Continued from p.* 318.)

Picea.

This family contains some of the grandest and most beautiful trees in the world; indeed, all the Silver Firs are so attractive, that the only way to be guided in making a selection from them is to ascertain the hardiness of each species—a quality in which, under our skies, some of the finest are rather deficient. Our practical knowledge of some of the Californian species is at present limited, owing, as in the case of P. amabilis, magnifica, concolor, and others, to the difficulty of getting a supply of good seed. The seeds are generally devoured before reaching this country by a maggot, which is hatched from an egg inserted when the cone is young and soft. Enough is known of these species, however, from the accounts of travellers, and from the few seedling specimens in this country, to stimulate collectors to do their utmost to obtain a good supply for the benefit of our grandchildren.

Picea nobilis.—Fortunately this splendid tree is becoming tolerably common in this country. In all collections it is the most conspicuous of the Silver Firs, and promises to be a useful forest tree. It is very hardy, of rapid growth, and although it is not advisable to place it in immediate exposure to the sea-blast, yet it agrees well with a marine climate, and stands ordinary storms well.

Picea Nordmanniana.—If P. nobilis be the best of the new Californian Silver Firs, this is undoubtedly the finest of the European or Asiatic species. It is likely at no distant date to supplant the common Silver Fir for ordinary planting; the timber being of better quality, and as it starts later in growth it is less apt to be injured by late frosts. Its growth is rapid and symmetrical, and the foliage of a bright grassy green, which has a very cheerful effect in mid-winter. It behaves well in exposure, though the writer has had no opportunity of studying it as a sea-side tree. The colour of this tree varies at different hours of the day; the leaves, which in sunshine spread out and show the green upper surface, curve upwards when the sun is off them, and show the silvery lining.

Picea Pinsapo.—Although eclipsed in stature by those just named even this limited list would be incomplete without this hardy and singular Fir. It is rather as an ornamental than a profitable tree that it should be planted, and although its growth is slow it should be allowed plenty of room and depth of soil to develop its peculiar character, which consists in extreme density and rigidity. The prickly short foliage distinguishes it from all other Firs.

Picea Lowiana (lasiocarpa) is a large Californian tree, which, from its late growth, is perfectly hardy in Britain. It seems, however, not to thrive in any but deep soils. Where such are available, with moderate shelter, it is a desirable and distinct tree.

Pinus.

The true Pines are probably useful to man in more ways than any other family of trees. While most species produce splendid timber, others produce food in great abundance; and the gums and juices of many sorts are imported articles of commerce. Our only native Conifer which attains the stature of a forest tree—the Pinus sylvestris, the Scotch Pine—belongs to this group, and, indeed, none of the new introductions are more truly beautiful. But there are many foreign species so grand and valuable that no collection or woodland should be without some of them.

Pinus austriaca (the Black Austrian Pine) is too well known to require much recommendation. It is an excellent sea-coast tree, and the rich massive foliage preserves its somewhat sombre but healthy green in all situations. It should be planted in masses, as when isolated as a specimen, or standing singly among deciduous trees, it is rather apt to be overturned by storms, because the roots are rather spreading than descending, and the head of the tree becomes very heavy and branching.

Pinus Laricio (the Corsican Pine), which resembles the last species in many respects, but is distinguished from it by more rapid growth, and by the twisting of the foliage, is a valuable forest tree, and one which has gained a good reputation. It is a good tree to plant in exposure, and is not particular about soil, appearing to thrive equally well in heavy clay and in thin poor soils. It is the last of the Fir tribe that rabbits will attack, no mean point in its favour.

Pinus Benthamiana.—Although thirty years have elapsed since this magnificent tree was first brought to this country, it does not seem to have become as popular as it deserves. The timber is most valuable, and grows to an enormous size on its native mountains, reaching a height of 200 ft. and a circumference of 28 ft. It is perfectly hardy in this country, and very ornamental from its long heavy foliage and bold habit.

Pinus insignis.—This is a real sea-side beauty. Of all the true Pines the greenest, and in mild districts the most rapid in growth, it is all that can be desired as an ornamental forest tree. In high cold districts it is not very hardy, from its habit of making a second growth in autumn.

Pinus radiata, which comes from the same hill-sides as the last species, bears a high character for beauty and usefulness, and will probably prove hardier than P. insignis in inland districts, but the writer cannot speak of it from experience. Pinus Coulteri also grows within sight of the Pacific, and being very hardy, it should be sought after.

Pinus cembra (the Arolla or Swiss stone Pine), is well known to Swiss tourists. Although of a somewhat gloomy colour and formal habit, and rarely growing more than 50 ft. high, this tree obtains a place in the list on account of its extreme hardiness. It should be planted in high exposed situations, where many other kinds would perish. The well-known Swiss carvings are made principally of the wood of the arolla, which is soft and easily worked.

Pinus excelsa (the Bhotan Pine).—This tree resembles the last as an Arab steed resembles a Shetland pony. It is quite hardy in this country, but dislikes extreme exposure. It well merits a sheltered place, where the beauty of its silvery, silky foliage may be fully displayed. For that beauty alone, if for no other, it is worth growing, realising, as it does, Virgil's eulogy on the Stone Pine—"Fraxinus in sylvis pulcherrima, Pinus in hortis" (the Ash is most beautiful in the woods, the Pine in gardens).

Pinus monticola.—A fine hardy tree from California, intermediate in appearance between the Cembra and Strobus, but excelling both in beauty, and to be preferred to either in this country. It does well on poor, rocky soils, and though slow of starting, grows rapidly when well established.

Pinus Strobus.—The Weymouth Pine has been long enough naturalised in this country to make it a tolerably familiar tree in the landscape. It has not justified the expectations formed about its use as a timber tree on this side of the Atlantic. There are, however, in various parts of the country fine specimens of it attaining a height of 80 ft. or 90 ft.; but it is not in every country that the conditions of soil and climate combine to produce the tree of that size. It prefers a sheltered situation and a deep gravelly soil, and is especially impatient of the sea-blast. The last-named species is more likely to be a profitable tree in exposure; but the beauty of the Weymouth Pine is such that it should not be discarded where circumstances are favourable to its growth.

It is difficult to leave the true Pines without naming a few more of the very attractive kinds that have been brought to this country; and it is only from strict regard to the principles observed in framing this list that no more than the ten above-named species are included in it.

Araucaria.

Araucaria imbricata.—The Chili Pine or Monkey-puzzle is only now attaining the stature of a forest tree in this country, although introduced as long ago as 1795. It is only when it reaches a height of 30 ft. and upwards that the true character of the tree begins to appear; it becomes then extremely graceful from the pendulous sweep of the heavy branches. Under that age it is a formal, rigid, and rather ungainly tree. It is extremely impatient of the proximity of other trees, and should always have free light and air all round. This peculiarity will always hinder the general use of it as a forest tree, even if the timber turns out in this country as valuable as it is reported to be in its own. It is perfectly hardy, and stands considerable exposure, agreeing with the immediate neighbourhood of the sea. It does not appear particular about soil, and, although it is said to dislike damp, I know instances of its growing vigorously in peat which contains water at 2 ft. or 3 ft. below the surface. It is a diœcious tree, therefore when cones are produced it is necessary, in order to fertilise the seed, to dust them with pollen from the flowers of the male tree. The first trees raised from native seed in Scotland were grown in 1874 from cones on a tree 28 ft. high, at Castle Wigg, in Wigtownshire.

Cedrus.

Cedrus atlantica.—Each of the three Cedars known and introduced to this country, are such beautiful and majestic trees, and agree so well with this climate, that it is impossible to exclude one of them from the most limited list. Indeed it is hard to say which of the three is preferable. The Mount Atlas Cedar seems to be the most rapid grower. Introduced in 1843, there are already specimens 50 ft. high in different parts of the country. Although a native of Africa, it is perfectly hardy with us. It requires a well-drained soil and moderate shelter.

Cedrus Deodara.—The graceful beauty of this tree when young has taken the popular fancy in a greater degree than almost any other Conifer. It is indeed a beautiful tree at all ages, and where a well-drained site can be obtained, it may be confidently planted as a timber tree. Its growth in this country is somewhat slow, though quicker than that of the next species. It is not adapted for sea-side planting.

Cedrus Libani.—The Cedar of Lebanon is known to us in this country from many stately specimens which we possess. It was introduced about 200 years ago, but its use has been confined to ornamental purposes, as it seems never to have been employed as a forest tree. Some of the old specimens which stand in gardens bear signs of maltreatment, which they have received when young, in the endeavour to keep them in a shrub state, showing singular want of discernment of the true character of this tree, which, though far from the tallest, is certainly as majestic as any tree in the world.

Cupressus.

Among the true Cypresses are ranked some of the most beautiful and stately trees in the world; they are remarkable from being conspicuously beautiful when only a few feet high, a quality in which many forest trees are somewhat deficient. In this list will be found only those which attain the stature of a forest tree, and which have proved themselves of undoubted hardiness in this country.

Cupressus Lawsoniana.—The Lawson Cypress is, perhaps, the gem of the group, promising at the same time to rank as one of our most valuable forest trees. It requires some shelter from high winds in order to develop its foliage properly, but it is proof against any amount of cold that it is possible to encounter in an English winter. It is not particular as to soil, but requires good drainage. Unlike the next species, it is not adapted for maritime planting.

Cupressus macrocarpa (the Monterey Cypress) is an invaluable tree for sea-coast planting. It should be securely staked when planted in exposure, as the annual growth is rapid and spreading. This Cypress has not proved hardy in high inland districts, and should not be planted except near the sea-coast. It is very ornamental, of graceful form, and unchanging bright green. From some unexplained cause, I have found that more plants are lost after planting in this than in any other kind of Conifer. All Cypresses transplant better in May than in any other month, provided this can be done without keeping them long out of the ground.

Cupressus sempervirens.—This is the Upright Cypress, so well known on the shores of the Mediterranean; and though only known in this country as an ornamental tree, yet its timber is considered more durable than any other in the south of Europe. Its requirements in this country are a well-drained soil and a sheltered though airy situation, and in these particulars it is exigent. Under such circumstances it is hardy in this country, and as valuable as ornamental timber can be, but it cannot be called robust under such conditions.

Cupressus Nutkaensis.—Known for long as Thujopsis borealis, this is a tree of great beauty and rapid growth. It is perfectly hardy, not particular as to soil so long as the site is well drained, and is one of the most distinct and effective trees for park planting. The timber is not likely to be of any great value in this climate. Moderate shelter should be afforded to this species.

Cupressus torulosa.—I felt some doubts about placing this species in the list, as it bears a doubtful character, according to Mr. Gordon, for hardiness, but I have had the opportunity of observing fifteen trees of this species for nearly twenty years on the west coast of Scotland, where they have remained totally uninjured by frost, and have been yearly increasing in stature and beauty, therefore it finds a place here, being one of the most distinct Cypresses we have. The trees above alluded to are from 15 ft. to 18 ft. high. Its growth in this country appears not to be very rapid. In northern India it attains an immense size, and the timber is considered equal to that of the Deodar. A well-drained site is indispensable; about other conditions of soil it appears somewhat indifferent. It has a very rich effect in lines or masses in gardens or kept ground.

Juniperus.

There are many handsome kinds of Juniper, but few attain the size of trees. Of our two native species, J. communis is a beautiful shrub, especially the upright Irish form (J. communis hibernica); the other (Juniperus nana), if, indeed, it be a species, and not merely a variety, is a very dwarf creeping bush. The first-named attains the size of a small timber tree in France, but in this country I do not recollect to have seen it higher than 15 ft. Of Juniperus religiosa (the Nepaulese Incense Juniper) I cannot speak from experience, but, from the description given by those who have seen it on its native hills, it must be a fine tree and worth looking after, for it grows to a height of 60 ft. to 80 ft., and produces good and very durable timber.

Juniperus virginina (the Red Cedar) is a very hardy tree, and admirably adapted for dry sandy soils where many trees would fail to grow. It has been long established, and is thoroughly hardy in this country, but is not specially suited for resisting high winds. It has of late been extensively planted in the Black Forest, to supply wood for the pencils for which the lead is there mined.

Libocedrus.

Libocedrus decurrens.—The beauty of this Arbor-vitæ is so remarkable, that it is worthy of every effort to establish it favourably. Although growing to a large size in America, it has not attained any great size during the twenty years since its introduction to this country. Its growth appears to be slow; still, it is probable that a deep well-drained soil in a sheltered situation will cause this plant to grow into a very ornamental and distinct tree. In California it is known as the White Cedar, and in English nurseries is generally mis-named Thuja gigantea.

Salisburia.

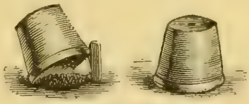
Salisburia adiantifolia.—The Ginkgo grows to an immense size in China and Japan; but it is not as a forest tree that it claims a place here, but on account of its singular dissimilarity from all other Coniferous trees. One or two specimens, at all events, should be included in any considerable collection, as it is decidedly ornamental as well as singular. The deciduous, leathery leaves, shaped something like those of a Maiden-hair Fern, distinguish it at once from any other of the Fir tribe.

Ivy on Stakes.—The plan adopted at Kew of growing some of the smaller varieties of Ivy on one or three stakes under 4 ft. high is a good one under various circumstances. A plant occurs between every two beds; three stakes meeting at the top look better than one. It is probable Ivies may be kept more satisfactorily in this manner than arranged on a wall, where they frequently grow together. The effect of the plants grown in this way is very good; for the sake of securing permanence in the supports iron stakes would probably be the best.—V.

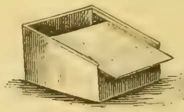
Magnolia Soulangeana.—This is a fine showy flowering shrub. When planted on a south wall it grows freely, and flowers in a young state. The blooms are very hardy, having withstood the snow and frost of last week with but little injury. —A. H., *Thoresby, Notts.*

SEED SOWING.

Now that favourable weather has at last set in, seed sowing will be an important operation. The first consideration should be to obtain good seeds, and those who have but little experience should invest their money cautiously in a few of the more hardy and popular kinds. Half-a-dozen good plants well cultivated, will give more pleasure than twice their number neglected. Always be careful to get seeds, suited to the purposes for which they are intended. If a climber be desired to cover a fence or trellis, the Morning Glory, the climbing Nasturtium, and similar plants will give satisfaction; while some of the more tender climbers will not be likely to come up if planted in such a situation as this, and if they do happen to grow, will not cover the place designed for them, and disappointment will be the result. If the object be a brilliant, showy bed on the lawn or in the border, the Petunia, Phlox Drummondi, Verbena, &c., will meet one's wishes; while a bed of Mignonette, or any of the smaller or less showy flowers, would be entirely out of place. If flowers of taller growth be desired for a showy bed more in the back-ground, the Zinnia, the French Marigold, Datura, &c., are admirably adapted, while some very beautiful dwarf-growing flowers would be worthless; even good flowers are sometimes condemned merely because they are out of their proper places. For instance, it would be wrong to sow Calceolaria and Cineraria, and other very delicate seeds, in the open ground and in soils where a Cabbage would hardly condescend to grow. The best soil for most flowers, and especially for young plants, and for seed-beds, is a mellow loam, containing so much sand that is will not bake after hard showers. If we have not such a soil, we must, of course, use the best we have, and as but little success is to be anticipated with delicate seeds in a stiff, clay soil, advantage must be taken of the various plans to ensure their proper germination. It is useless to try to grow good flowers on a poor, or a hard, unbroken soil, or in a bed choked with weeds. In either case the plants become dwarfed, arrive at maturity too early, and flower and ripen their seeds before they have attained half their natural size, and about the time a good robust plant would be forming its buds. Such a soil can be much improved by a little sand, or ashes and manure, and by pretty constant working. It must not, however, be handled when too wet. The flower garden should always be so drained that no water will stand on or near the surface. The manner in which seeds are sown is another important matter, and one in which beginners are most likely to fail. One "forget" may ruin a whole sowing of the choicest seeds. Of course, there are some kinds of seeds that are robust and that will grow, no matter how they are treated; but others require careful treatment. Many seem to think that seeds will grow anywhere and under any circumstances. They have learned that seeds of some trees and plants will grow without planting and care; and from these facts they get the idea that it is of little importance how or where seeds are sown, provided they are in the ground. But it should be considered that such seeds are usually larger and produce stronger and more robust plants than those used in the garden, and that thus they are enabled to bear more hardships and to live under more unfavourable circumstances. Another fact should be remembered—that not one seed in a thousand matured by our forest trees and shrubs produces a living plant. A forest tree will produce seed enough for an acre of closely set plants, and perhaps not a dozen will grow. We cannot afford to purchase costly seeds and lose such a large proportion, which we shall do if we plant in the same manner. If cultivators would be satisfied with only the most hardy and prolific flowers, such as would take care of themselves, then they might pursue a careless system of planting and cultivation, and fill their grounds with plants; but they crave for flowers that are not natural to our climate—those that flourish in warmer climes and under more genial skies—their dazzling beauty, their delicious fragrance, must be secured at almost any cost of time and labour. This is all very well; but having made up our minds to possess such treasures, we must pay the price—we must study their habits and treat them accordingly. A hot-bed, if properly managed, is of great aid in effecting the germination of seeds, and it is well that all should know why this is so, for there are many cases of failure as well as of success. If seeds be planted too deeply, they either rot in the damp cold earth, for want of the warmth necessary to their germination, or, after germination, perish before the tender shoots can reach the sun and air. If the soil be stiff clay, it is often too cold at the time when the seeds are planted to effect their germination; for it must be understood that warmth and moisture are necessary to germination. Neither of these will do alone. Seeds may be kept in a warm, dry room, in dry sand or earth, and they will not grow. They may be placed in damp earth, and kept in a low temperature, and they will most likely rot, though some seeds will remain dormant a long time under such circumstances. Place them, however, in moist earth, in a warm room, and they will commence growth at once. Indeed, if seeds become damp in a cold store room they rot, while if the room be warm they germinate, and thus become ruined, so that seedsmen have to exercise great care in keeping their seeds well aired and dry. Another difficulty with a heavy soil is that it becomes hard on the surface, and this prevents the young plants from "coming up;" or if during showery weather they happen to get above the surface, they, become locked in, and make but little advancement, unless the cultivator is careful to keep the crust well broken; and in doing this the young plants are often destroyed. If stiff, the soil where fine seeds are sown should be made mellow, particularly on the surface, by the addition of sand and light mould. If seeds be sown in rough, lumpy ground, a portion of them will be buried under the clods, and will never grow; and many that start, not finding a fit soil for their tender roots, will perish. The soil, we will suppose, is well prepared, fine as it can be made, and of that loamy or sandy character best fitted for small seeds. We will suppose, too, that the seeds were sown on the surface, with a little earth sifted over them, and that this was not done until the season was so far advanced as to furnish the warmth necessary to secure vegetation. Under these very favourable circumstances many seeds will grow; and if the weather be both warm and showery few will fail. But if, as is very common at the season of the year when we sow our seeds, we have a succession of cold rainy days, many of the more tender kinds will perish. A night's frost will ruin many more. If, however, the weather should prove warm and without showers, the surface will become very dry, and the seeds, having so slight a covering, will be dried up and perish as soon as they germinate, and before the roots attain sufficient size and strength to go down in search of moisture. Of course, the finer and more delicate seeds, and those natural to a more favourable climate, suffer more than those that are more robust. In order to overcome these evils, glass must be employed. By being protected at the sides and ends with boards, and covered with glass the moisture which arises from the earth is confined, and thus the atmosphere is kept humid and the surface moist, and the plants are not subjected to changes of temperature, as a uniform state can be maintained, no matter what the weather may be. The bottom-heat, if any, warms the soil, and enables the grower to put in his seed early, and obtain plants of good size before the soil outside is warm enough to receive the seed. Care, however, is required to prevent scorching the young plants. In bright days, the heat is intense inside the frame, and unless air is freely given, or some course taken to obstruct the rays of the sun, most likely a great portion of the plants will be ruined. Some time ago I was called to examine a hot-bed, as the seeds planted did not grow, when I found they had been all burned up, except a few along the edges that were shaded by the sides and ends of the frame. When the sun gets pretty warm, give the glass a thin coat of whitewash. This gives a little shade, and, with some air during the middle of bright days, will make all safe. A hot-bed is readily made by forming a pile of strawy horse-manure and leaves, some 3 ft. in height. It may be sunk in the ground 12 in. or 18 in., or made on the surface. On this set the frame and

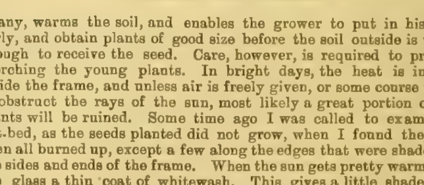


Flower-pot Protections.



Box Hand-glass.

Ordinary Hand-glass.



Bell-glass or Cloche Protections.

place in it about 5 in. of good mellow soil, keeping the frame closed until fermentation takes place and the soil is quite warm. After this wait a day or two, and then sow the seeds. The principal advantages of a hot-bed may be secured by what is called a cold frame. This is simply a hot-bed frame and sash placed upon a bed of fine, mellow earth, in some sheltered place in the garden. By the exclusion of air and the admission of sun-heat, the earth becomes warm, and the moisture is confined, as in the hot-bed. After the frame is secured in its place, a couple of inches of fine earth should be placed inside, and the frame closed up for a day or two before the seeds are planted. As the cold frame depends upon the sun for its warmth, it must not be started as soon as the hot-bed; late in April is, in fact, soon enough. Plants will then be large enough for transplanting to the open ground, as soon as all danger from frost is over, and, as a general rule they will be hardier and better able to endure the shock of transplanting than if grown in a hot-bed. A frame of this kind anyone can manage. Watering occasionally will be necessary; and air must be given on bright, warm days. Shade also is necessary. Such frames, when so small as to be conveniently moved by the hand, are called hand-glasses. A simple frame or box, with a couple of lights of glass on the top, will answer every good purpose, though when small it would be better to have the front of glass. A very good hand-glass is made of a square frame, with a light of glass at each side and on the top. These contrivances, though so simple as to be made by any one handy with tools, are exceedingly useful, as they prevent the drying of the surface of the ground, and afford the plants shelter from sudden changes of temperature. Seeds may be sown indoors in pots and pans, but the greatest difficulty is that in these the soil dries very rapidly, and the young plants are apt to suffer. Under such circumstances a good plan is to cover the pots with glass, removing it occasionally for air and watering. Where very fine seeds are sown in pots, the watering, unless carefully done, generally results in great injury. A wet paper placed over the top of the pot will afford moisture enough for the germination of fine seeds. If pots be used, it is well to sink them to the rim in a box of Moss, or something of the kind that will hold moisture, and prevent the drying of the earth in the pots. A shallow box may be used to advantage, sowing the seed carefully in narrow drills. Where these conveniences are not to be had, make a bed of light, mellow soil in a sheltered situation in the garden; and as soon as the weather becomes settled, and the ground warm, sow the seeds, covering them with a little fine earth, and if very small sift it upon them. Some one has given as a rule that seeds should be covered twice the depth of their own diameter; that is, that a seed one-sixteenth of an inch through should be covered one-eighth of an inch. Perhaps that is as nearly correct as any general rule can be. If the weather should prove dry after sowing, it would be well to cover the beds of very small seeds with damp Moss, or what is better, with evergreen boughs or boards, or something that will afford partial protection from the sun and wind. A good plan is to nail laths on a frame, leaving the open spaces about as wide as the lath. Seeds do not require light for their germination, and will grow quite as well in the dark as the light until they are above ground. Bell-glasses are convenient both for in-doors or garden use, only care must be given to afford plenty of air, especially on bright days, and shading may be necessary. An inverted flower-pot answers almost as good a purpose, but when the young plants are up they will need light, which can be afforded for a few days and until the plants are large by elevating the pot, as shown in the accompanying woodcut. Light and air should be furnished as soon as the plants are above ground, or they will become weak and pale. Of course, it is designed that plants from a hot-bed, cold frame, and seed bed shall be transplanted to the border or beds where they are to flower, and these helps are intended mainly for what are called half-hardy annuals. Hardy annuals may be sown where they are to flower, but, with the exception of a few varieties difficult to transplant, it is best to sow all in a seed-bed. Seeds of certain hardy annuals and perennials may be sown in September. The produce is thus enabled to make vigorous growth early in spring, and to become well matured before the heat of summer sets in. After plants in the seed-beds have obtained their second leaves and have made an inch or two of growth, they should be transplanted. This should be done on a dull, showery day, if possible; if not, the plants may require shading after removal until they have become established. In transplanting in dry weather, always give the plants as they stand in the seed-bed a good soaking with water, and also the soil to which they are to be removed, an hour or so before removal. In removing, disturb the roots as little as possible. If the plants be not too thick, there is no need of injuring the roots; and in sowing, it is well to bear this in view, and to sow evenly and thinly. As soon as the young plants come up, if too thick, a portion should be removed. A few plants, with long tap-roots, will not bear removal well. The Larkspurs are difficult; and these and Poppies, and plants with similar roots, should be sown where they are to flower. Still, there are few plants that cannot be removed when young, with proper care. Sweet Peas, Candytufts, and a few flowers of similar character, that do best if sown as early as the ground can be got ready, should always be sown where they are to flower. JAMES VICK.

THE KITCHEN GARDEN.

SEEDLING POTATOES *v.* THE DISEASE.

I SEE that Mr. Torbitt, of Belfast, has again started the theory that seedling Potatoes will resist the disease if the experiment be carefully and repeatedly performed. Now, I believe some of our largest growers of Potatoes have taken the greatest care in trying seedlings with the older sorts in seasons when the disease was prevalent, and have found that they were attacked all alike ever since 1846. I have raised many thousand seedlings myself (some of them from the wild varieties of Chili and Peru), and I have not found one of them to be disease proof. The only chance of producing disease-resisting Potatoes is to raise them from varieties with red leathery skins and strong woody haulm, such as the Red Skin Flour-ball and scarlet prolific kinds. All kinds of Potatoes degenerate after they have been in cultivation a certain number of years, and it is only by raising seedlings that we can get vigorous new sorts, to be again superseded by others. All our very best table varieties with thin white skins, such as the Lapstone, Fluke, and Regent, are most subject to disease in wet seasons, and seedlings raised from them inherit the same propensity; the only safe way yet known of preventing loss in our Potato crops is to plant, as early as the season will permit, the earliest ripening varieties of the early and second early sections, so as to have them ready for lifting before the disease appears in July and beginning of August. The life history of the Potato fungus (Peronospora infestans) is now being investigated by Mycologists, and practical men will have to aid them by experiments in finding out some way of destroying it, if found to rest in the tubers or soil; or, what is most likely, the resting spores may winter in other plants, and be diffused in the air when the temperature suits their development. A great run has lately been made on new high-priced American Potatoes, but the majority of them, when grown in this country, have an objectionable flavour as far as table use is concerned. They are, however, very prolific, and possess early ripening properties, and they may be the means, by hybridization, of improving English-grown kinds, as regards short-growing haulm and early ripening; but as respects the disease, they are quite as liable to it in bad seasons as English varieties. W. TILLERY.

TRUFFLES.

M. A. GEOFFROY SAINT HILAIRE, the President of the French Acclimatization Society, recently read a letter before that body, giving some interesting details on the subject of Truffles. The letter is dated Romans, in the department of the Drôme, in Dauphiny, the head-quarters of the Truffle trade. Truffles are hunted for throughout the winter by means of dogs specially bred and broken in for the purpose, and afford profitable employment to labourers in these parts, who at that season of the year have little or nothing else to do. The best strain of Truffle dogs is that known as "Chiens de la Bois," or the wolf-dogs, popularly known as "Loulous." The dogs must be broken in fasting. They are given Truffles, of which they are very fond, several days in succession, after which these dainties are hidden in various places, and they are made to find them. A good Truffle-hunting dog will fetch £5 or £6. During the discussion which ensued with reference to this letter, M. Cosson stated that in certain localities in the neighbourhood of Paris, Truffles were found in the woods, and specially trained dogs were employed for hunting them. At Etampes and at Nemours Truffle dogs were used as in Dauphiny, and this kind of sport, if such it can be called, formed a very profitable and attractive occupation. As proved by M. Chaton, it is only in calcareous soils that we must look for Truffles, and in young Oak plantations of ten or twenty years' standing, as old Oak woods produces but a meagre supply. M. Vavin remarked that it was not only in Oak woods that the Truffle must be looked for, for last year in his own neighbourhood, in the Valley of Montmorency, he had seen large quantities dug up under Mulberry trees. M. Lichtenstein said that at Montpellier Truffles were found under various kinds of trees, especially under the Laurustinus. Dogs were sometimes employed to hunt them out, but pigs were generally preferred, as they showed more aptitude, and would hunt the whole day without tiring. M. Millet reminded his hearers that he had repeatedly called attention to the fact of the Truffle being found under other trees besides the Oak. The Truffle was at one time considered to be a kind of gall produced amongst the roots of the Oak by the puncture of an insect; but it is now well known to be a subterranean Cryptogam, whose growth was encouraged by the shade of trees. At the next meeting of the Society, M. Vavin laid before the members a specimen of Truffles found at Besancourt, Seine-et-Oise, in the park belonging to Madame Clerget. These Truffles were of excellent quality, and closely resembled those of Perigord. They were nearly all black, and marbled with white veins. They were found under Mulberry and Hazel Nut trees in large quantities. The end of October, when this gathering was made, appears to be the most favourable season for the purpose. At this period the Truffle has its full flavour, and has not suffered from the damp caused by November fogs. T. L.

Conover's Colossal Asparagus.—My experience of this variety is, that one-year-old plants of it were nearly, if not quite, as large as two-year-old plants of the common variety, sown at the same time and in similar soil. Now, however, when the plants of each sort are four years old, I can perceive but little, if any, difference in the size of the heads of the two sorts; but the stems of Conover's variety appear to be of a somewhat brighter green than those of the common sort. I think that Conover's may be confidently expected to come into use one year sooner than the common sort.—P. Grieve, *Culford Hall, Bury St. Edmunds.*

Model Potato.—This is well known as one of the very handsomest of white round Potatoes, and it is a large cropper. Its table quality is not first-rate, but it improves by keeping. It is not only almost the very latest Potato to start into growth in the spring, but it is equally late in ripening, and, best of all, it is later in pushing growth in the store than any other kind with which I am acquainted. I kept a quantity of it in a large tub all the winter, and although untouched at the bottom for five months, it has not pushed in the least. It is well worthy of cultivation on light soils for use through April, May, and June.—A. D.

Birmingham Potato Show.—It may interest exhibitors of Potatoes to know that the Council of the Birmingham Cattle Show have again decided on offering good prizes for Potatoes, to be competed for at the great Show at Birmingham in December next. The experiment made last year of arranging classes for "types of kinds" was so thoroughly successful that it has been decided to continue it. Thus Ashleaf Kidneys, known by innumerable synonyms, are to be exhibited in one class; for Lapstone Kidneys, which are also known by a number of names—*e.g.*, Haigh's Seedling, Pebble White, Hedley's Nonpareil, Yorkshire Hero, &c.—another class is set apart. Regents or Dalmahoys, or any variety of this class or type, no matter by what name known, are provided for in another class. Classes are also provided for (1) Paterson's Victoria, (2) Vermont Beauty or Brownell's Beauty, (3) for Snowflake or other white-skinned American variety, including Bresee's Climax, Bresee's Peerless, American Breadfruit, Early Goodrich, &c.; (4) for "any white-skinned variety not provided for in the other classes;" and (5) for "any coloured-skinned variety not provided for in the other classes." There are also classes for three, six, and twelve varieties respectively, choice of sorts being left entirely to exhibitors, and in the latter twelve varieties the prizes are so good that the competition cannot fail to be large, for in addition to £5, £3, and £2 for first, second, and third prizes in money, a cup value ten guineas will be awarded to the winner of the first prize. Other valuable prizes are also offered. A list will shortly be ready.—B.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

The Turban Squash.—A correspondent informs us that the Turban Squash thrives admirably in his garden in the suburbs of London. He finds it an agreeable addition to his vegetable stores in autumn, and it keeps throughout the winter. Some of our readers, thus encouraged, may be induced to try this variety.

The Best Broccolies.—Among the many varieties which we are growing this season, none comes up to Excelsior and Leamington. One late kind which I got from Messrs. Harrison, of Leicester, for trial, not yet in, is a perfect dwarf, with fine large leaves which lie close to the ground. I cannot help thinking that this will be a good addition to late sorts.—R. Gilbert, *Burghley.*

Asparagus without Digging or Forcing.—The "Gardeners' Monthly" gives an instance of a remarkably fine yield of Asparagus occurring in a case where, after planting on the level ground, there was no culture of any kind beyond adding 2 in. or 3 in. of rich mould over the surface yearly. The bed was never dug over with fork or spade. This approximates to the French mode of culture.—V.

TRIAL OF BEDDING PANSIES AND VIOLAS AT CHISWICK IN 1875.

The varieties of these plants subjected to the test of trial were contributed by Messrs. Dickson & Co., of Edinburgh; Messrs. Cocker & Sons, of Aberdeen; Mr. R. Dean, of Ealing; Mr. G. Westland, of Witley Court; Dr. Stuart, Messrs. Milligan and Kerr, and Messrs. Robertson & Galloway. Those only are here described which obtained first-class certificates. In several instances the certificates granted in 1874 under less favourable circumstances were now confirmed. The plants were inspected by the Committee on June 9th, and again on July 16th. The following may be regarded as a selection of the best of the bedding Pansies, chosen from the point of view of showing compactness and dwarfness of habit, profuseness and continuity of bloom, and useful and effective colours rather than that of size and shape in the individual flowers—chosen, in fact, for those special features which give them their value as bedding plants.

1. **Alpha** (Dickson & Co.)—A very compact-growing, vigorous-habited, free-flowering variety. Flowers large, bluish-purple, with a reddish flush; the eye yellow, with a bilobed dark spot in front. Good and lasting.

2. **Bedfont Yellow** (Dean).—A free-growing compact-habited sort. Flowers large, bright golden-yellow, with pencilled eye. Good and effective.

3. **Blue Bell** (Dean).—A very showy variety of compact, spreading, free-blooming habit. Flowers numerous, medium-sized, mauve purple, with a small yellow eye pencilled with dark lines. The individual flowers are deficient in shape, but the effect of the mass is good, and the plant is a continuous bloomer. Awarded a first-class certificate in 1874, which was now confirmed.

4. **Blue Perfection** (Westland).—Of compact free-blooming habit. Flowers medium-sized, of a deep reddish mauve, with yellow eye. A fine effective self-coloured variety. The variety sent in as Purple Perfection proved to be the same as this.

5. **Dr. Stuart** (Stuart).—Of dwarf compact habit. Flowers mauve purple, with small yellow eye surrounded by a narrow dark ring. A neat and pretty flower.

6. **Golden Gem** (Dickson & Co.).—A variety of dwarf-spreading habit, and a free bloomer. Flowers large, deep yellow, with deeper eye, over which occur dark pencillings. Good and lasting. Awarded a first-class certificate in 1874.

7. **Lilacina** (Dean).—A charming variety of dwarf compact spreading habit, free-growing, and very distinct. Flowers of moderate size, the upper petals of a reddish lilac, the lower ones bluish lilac, with small yellow eye. An exceedingly pretty and taking flower.

8. **Lothair** (Dean).—A novel variety, with a dwarf compact habit of growth. Flowers large, deep purple, with small yellow eye, and broadish bronzy spot just below it on the lower petal. A distinct and rich-looking flower, of lasting quality.

9. **Lily-white Tom Thumb** (Dean).—A very useful variety, of free, compact, spreading habit. Flowers white, with yellow eye and dark pencillings. The flowers are tolerably constant as to purity, but they occasionally blotch in hot weather. The first-class certificate awarded in 1874 was confirmed.

10. **Magpie, or La Pie** (Dean).—An old French variety, still useful because striking in appearance from the strongly contrasted colouring of its flowers. It is of vigorous but rather tall-growing habit, of a hardy constitution, and an abundant bloomer. Flowers blackish mulberry, with a large wedge-shaped spot of white at the tip of each petal; the spotting sometimes runs out, when for a time the flowers become self-coloured.

11. **Mulberry** (Dean).—A dwarf-growing variety of compact but spreading habit and free flowering. The flowers are well displayed, of a dark reddish plum purple, with very small yellow eye. The first-class certificate of 1874 was confirmed.

12. **Novelty** (Cocker & Son).—A showy variety, of free-growing habit, but growing rather tall. Flowers reddish or pucy-purple, with yellow eye; showy. A pleasing variety among the self-coloured flowers.

13. **Peach Blossom** (Dickson & Co.)—An attractive variety of close habit, and a free bloomer. The flowers, which are of good form, are of a curious motley colour, a reddish or pucy-lilac, paler at the tips. Its neutral tint was thought likely to be useful in grouping.

14. **Princess of Teck** (Dean).—A very free-growing variety, and a continuous bloomer. The flowers are large, of good form, and of a pale bluish-lilac. It is quite novel in colour, somewhat approaching that of Lilacina.

15. Queen (Dickson & Co.)—A variety of free, compact habit, an abundant bloomer, but rather later than some others. Flowers large, white, with yellow eye and dark pencilled lines. The first-class certificate awarded in 1874 was confirmed. It is not, however, a lasting sort, as it was quite out of bloom when inspected in July.

16. Queen of Lilacs (Dickson & Co.)—A variety of free, bold habit, forming close vigorous tufts. Flowers, reddish-lilac, paler at the edge, being freely produced; a soft neutral colour, and useful for grouping. It was considered to be novel and effective, and on these grounds received the certificate.

17. Royal Blue (Dean).—A deep purplish-blue, with a dark eye. A showy and attractive flower, of good quality, and lasting.

18. Sovereign (Dickson & Co.).—Of close-growing habit, dwarf, free, and prolific of blossoms. Flowers moderate in size, of a bright deep golden-yellow, with a pencilled eye. Very effective, and a good lasting variety.

19. The Tory (Dickson & Co.).—A variety of free and vigorous growth, blossoming abundantly and continuously. Flowers large, deep bluish-purple, with white eye and a bilobed mulberry spot in front of it. Good throughout the season. The first-class certificate awarded in 1874 was confirmed. Under the name of Monarch was grown a variety not distinguishable from this in the colour of its flowers.

20. White Swan (Dean).—A fine variety, of close-tufted habit. Flowers of moderate size, pure white, with pencilled eye, of good substance, and very clean and chaste-looking.

21. Williams (Stuart).—A free-blooming variety, raised from Viola cornuta, fertilised by True Blue, a dwarf Viola like Perfection. It is dwarf and spreading in habit, the individual flowers being small, cornuta-like, and of a light mauve colour. The plant is very effective from the great number of its flowers, which are produced in succession till late in the summer. T. Moore.

New Plants of the New York Horticultural Association.—At the exhibition of plants Messrs. Parsons & Sons, of Flushing, L. I., showed a lilac-coloured Daphne Genkwa, at a distance somewhat like a Persian Lilac, and a pure white Magnolia, named Halliana, both these shrubs being from Japan. Mr. Roehrs, florist, Jersey City, had a new Begonia, with flowers 2 in. across, of the most brilliant scarlet. This species, sent by Mr. Roezl from Peru, is yet unnamed, according to the "American Agriculturist." The Association decided to hold its first exhibition in June, not for prizes, but the plants to be voluntarily contributed by the members, and other well-wishers of the Association. This course is unusual at horticultural exhibitions, which are usually made up of articles in competition for prizes offered, but the members feel confident that they can make their first exhibition one of which the Society will not be ashamed, without any drain on their treasury for prizes.

Sale of Exhibition Plants.—Mrs. Cole & Sons, of Didsbury, having decided to relinquish the exhibition department of their business, the whole of their valuable specimen plants were sold the other day by auction. The first day's sale was held at Withington, and the following are some of the prices realised for greenhouse plants:—Boronia pinnata, £10 10s.; Aphelexis macrantha rosea (Chilman's variety), £21; Acrophyllum venosum, £7 7s.; Cordyline indivisa, £27 6s.; Azalea Trotteriana, £15 15s.; A. Iveryana, £10 10s. 6d; A. magnifica, £110s. 6d.; A. Cedo nulli, £13 2s. 6d. A. Duc de Nassau, £13 2s. 6d.; A. Conqueror, £10 10s.; Erica Cavendishii, £20 9s. 6d.; E. Lindleyana, £16 5s. 6d.; E. tricolor Wilsoni, £12 12s.; E. aristata superba, £9 9s.; E. affinis, £9 19s. 6d.; E. Massoni major, £12 1s. 6d.; E. Turnbulli, £8 8s.; Camellia eximia, £7 17s. 6; Double White Camellia, £20. Among the more important prices realised for stove plants were the following:—Cocos Weddelliana, £50; Croton augustifolium, £14 14s.; Anthurium Scherzerianum, £50. For other lots comparatively high prices were also realised.

"**Arbour Day.**"—The Legislature of Kansas at its late session, by concurrent resolution, requested the Executive to designate a day to be known as "Arbour Day," and to recommend a proper and general observance of the same throughout the State. Governor Osborn accordingly issued a proclamation, setting apart Saturday April 1, as such, and inviting all the good people of the State to devote that day, or a portion thereof, to the work of beautifying the country by the planting of trees and shrubbery, especially commending to the popular care the streets, highways, and public reservations of every character.

The number of shade trees in Paris is estimated at 90,000. We, however, think the number is much higher.

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY,

April 26th.

Amongst the many interesting plants exhibited on this occasion were well-bloomed collections of Clematises from Messrs. Jackman & Son, of Woking, of which some account will be found in another column. Some new forms of Mignonette, shown by Messrs. Carter & Co., were remarkable examples of good cultivation. Some of the larger plants were fully 6 ft. in height, and formed perfect cones 4 ft. or more through at the base, and literally masses of fresh green foliage and deliciously-scented flowers. A new Hybrid Perpetual Rose, sent from Cheshunt by Messrs. Paul & Son, promises to be a most desirable variety. Of this some account will be found below.

Botanical Certificates.—These were awarded to the following new plants:—

Hypolepis Bergiana (B. S. Williams, Holloway).—This graceful Fern has triangular tripinnate fresh green fronds, the smaller divisions being borne on a densely hairy rachis. It well deserves culture as a decorative stove plant, being both distinct and elegant in habit.

Niphobolus Heteractis (B. S. Williams).—A robust creeping Fern, having broadly ornate simple fronds bright green in colour and downy beneath, each being borne on a downy rachis about half the length of the leaf. It resembles in habit the old N. Lingua, but the downy, almost silvery, under-surface of the fronds gives it a distinct appearance. It will form a useful addition to decorative Ferns, especially for culture in baskets or on rockwork.

Floricultural Certificates.—These were awarded to the following new florists' flowers:—

H. P. Rose Duke of Connaught (Paul & Sons, Cheshunt).—This beautiful new Rose has smooth finely-incurved velvety petals of the richest crimson, shading off to fiery scarlet towards the margins. Its foliage, too, is stout, and of a deep green colour, which sets off the flowers to excellent advantage. It is undoubtedly a variety of first-class merit, and one which will be invaluable as a dark variety for exhibition purposes.

Auricula Mrs. Purvis (C. Turner, Slough).—A variety belonging to the grey-edged class; it has clean paste, surrounded by a deep velvety purple-body colour, which feathers delicately into the cool greyish-green margin. Being nearly perfect both in colour and truss, it cannot fail to be a favourite.

Stove and Greenhouse Plants.—Among Messrs. Jackman's Clematises we noticed well bloomed plants of Vesta, of which we this week give a coloured plate. In addition to its delicate colour, it has a satin-like lustre, which adds greatly to its beauty. Associated with it were C. Stella, a kind similar in form to Vesta, but larger, and its colour is bluish lilac, with a purplish bar down the centre of each segment. The Queen and Lady Londesborough are two well-shaped varieties, of a soft lilac tint. Sir Garnet Wolseley is a distinct and most floriferous kind, the young flowers being of a rich claret purple tint, which in the old flower changes to dark blue with a claret-coloured band down the centre of each petal; Mr. S. C. Baker is a paper white variety, with eight blunt sepals, each having a rosy stain down the centre. These Clematises, being distinct in character from any of the other plants with which they were associated attracted much attention. Mr. Ward, gardener to F. G. Wilkins, Esq., of Leyton, had good specimens of the Jessamine-like Rhynchospermum and Balfour's crimson and white Clerodendron; and in the same group was likewise Ward's variety of Anthurium Scherzerianum, with eight enormous spathes, the largest of which measured nearly 5 in. in length and about 4 in. in width. Mr. Ward also furnished well-bloomed specimens of Erica Cavendishii, the best of all yellow-flowered Heaths; a strong plant of Pescatore's Odontoglossum, with three branching spikes; a large and well-flowered example of Eriostemon intermedium, and another of Lycaste Skinneri, the latter unusually well furnished with flowers. In this collection were likewise two or three well-bloomed Azaleas. Mr. Turner, of Slough, had six well-grown Azaleas, the best of which were Bijou de Paris, white striped with rose, and so floriferous that scarcely a leaf was visible; Madame A. Verschaffelt, rosy-salmon, shading off into white at the crisped edges, and spotted with crimson; Charmer, a glowing cerise variety, of good form and substance; Comtesse de Flandres, a large crisped flower of excellent form, the colour being bright rosy-lilac; and Reine des Fleurs, a crimson-spotted variety of a delicate salmon colour, shading off into white at the margins. Messrs. Cutbush & Sons had also an interesting group of smaller plants. In the amateurs' class for Azaleas Mr. Ratty, gardener to R. Thornton, Esq., The Hoo, Sydenham, showed six shield-shaped plants well bloomed, the two best being Duc de Nassau, bright crimson edged with lilac; and General Todleben, a semi-double variety, of a vivid vermilion-scarlet colour: Mr. James, gardener to W. F. Watson, Esq., Isleworth, also showed a choice group in this class. Mr. Heims, gardener to F. A. Philbrick, Esq., Avenue Road, St. John's Wood, contributed a collection of well-grown Orchids, among which were two strong plants of the bright rosy-lilac Masdevallia Lindeni, each bearing five flowers and buds; M. ignea, bearing three vivid orange-scarlet flowers; three well-bloomed Vandas, and a good plant of Phalænopsis grandiflora, furnished with four fine flower spikes. The same collection also contained a fine plant of Odontoglossum Roezli album, with eight spikes and thirteen large pure white flowers; and a very good plant of the purple-spotted type, bearing two spikes; likewise, the pearly-white Cypripedium niveum, and the lilac-purple Dendrobium lituiflorum, both in good condition. Messrs. Carter & Co. sent the best six plants of Dielytra spectabilis, and beautiful examples they were of this most useful of all hardy herbaceous plants. Mr. James showed an effective group of Cinerarias, consisting of dwarf bright distinct-looking kinds. Among them we remarked Picta, a well-formed pure white flower, tipped with magenta; Her Majesty, carmine, with a distinct white circle round the eye, large and effective; and a deep blue-self named Purple Gem. Messrs. Carter and Co. sent, in addition to their fine examples of Mignonette already alluded to, specimens of their new Coleus Duchess of Edinburgh, in good condition, its colour being brighter than that of any other variety.

Roses.—Mr. Charles Turner was the only exhibitor of Roses in pots. Among his plants, which were both well grown and well bloomed, we noticed the blush tea-scented Souvenir d'un Ami, which is lovely in the bud, the petals being excessively soft and shell-like; Mont Blanc, a delicate sulphur-tinted tea-scented variety, the buds of which remind one of those of Niphetos, but in this case they are much smaller; Paul Verdier, a full and shapely rosy crimson variety, the older flowers shading off into lilac; the bright, rosy-coloured Edward Morren, and the blush Mdlle. Therese Levet were also very attractive, as were likewise Charles Lawson and Marquise de Castellane, although scarcely at their best. A plant of the ever welcome Alfred Colomb bore two or three delicately cupped blooms; this is one of the most beautiful and fragrant Roses of its class. A choice and well-arranged collection of cut blooms came from Messrs. W. Paul & Sons, of Waltham Cross; among these were the new blush Rose Captain Christy, also Gloire de Dijon, the ever welcome Maréchal Niel, Baroness Rothschild, with exquisitely formed soft rosy lilac flowers, and Madame Bérard, a kind in the way of Gloire de Dijon, but smaller and of a richer colour. Here again the delicate Souvenir d'un Ami was in lovely condition, as were also the sulphur-tinted Celine Forestier, and the new crimson, purple, or magenta-tinted Star of Waltham. A rather smaller collection of cut blooms came from Mr. J. Walker, Thame, who sent two admirable stands of Maréchal Niel.

Hardy Flowers.—These were well represented. Mr. W. Elliott, gardener to Latimer Clark, Esq., Sydenham Hill, showed a very select group of fresh and healthy plants, among which we noted the slender rosy-flowered Epimedium rubrum and its white-blossomed ally, E. niveum; also a dense specimen of Anemone nemorosa bracteata, bearing fully a hundred pure white star-like flowers set amid delicate cut fresh green foliage. Associated with these were also Caltha palustris minor fl.-pl., one of the best of all the double-blossomed kinds; Anemone nemorosa fl.-pl., or double White Wood Anemone; the large white-flowered A. trifolia, a kind with solitary stellate flowers of pearly-whiteness as large as a crown piece, and a specimen of Primula ciliata intermedia, bearing quite a dozen trusses of rich purple yellow-eyed flowers. Mr. Clark also furnished a very effective group of seedling Polyanthus-Primroses, one of the best of which was Empress of India, a kind with a good foliage and stout erect trusses of golden-yellow flowers, having a vivid orange margin around the eye. The plant of this kind staged bore seven trusses, and is so robust and effective that it will prove useful either for spring beds or for pot culture. A dark crimson yellow-eyed variety, in the way of P. auriculæflora, was also an effective kind, especially for pot culture. Mr. Roberts, gardener to W. Terry, Esq., Peterborough House, Fulham, also sent an excellent collection, in which were White Wood Lily (Trillium grandiflorum), bearing a dozen large flowers; Triteleia uniflora conspicua, furnished with about 200 flowers; the dwarf Gold-tuft (Alyssum saxatile), and the large-flowered Purple Aubrietia (A. purpurea grandiflora), the group being completed by well-grown plants of Spiræa japonica, Dielytra spectabilis, Solomon's Seal, and the delicate white variety of the Wood Hyacinth (Scilla nutans). The last four plants are perhaps the best of all hardy herbaceous plants for forcing, and they are kinds which may be readily grown as out-door plants in every cottage garden. Mr. Roberts likewise contributed a smaller collection, in which we remarked the well-known Trollius asiaticus, and a very bright orange-scarlet-flowered variety of the Poet's Narcissus, known as N. Poetarum; the Virginian Lungwort (Pulmonaria virginica), and the dwarf shrubby Daphne Cneorum. Auriculas were rather poorly represented, the best collection being that sent by Mr. Charles Turner, of Slough. In this the following were conspicuous, viz., Lord Clyde (Lightbody), a rich maroon self, the paste being pure and distinct; Col. Champneys (Turner), one of the best of its class, and nearly always good alike, the body colour being rich amethyst-purple; Mrs. Sturnock (Martin), an effective reddish-purple self, well worth culture; Topsy (Kay), a rich purple self; and Charles Perry (Turner), a lovely purplish-blue flower of good form and excellent in habit. The two last-named varieties were much and deservedly admired.

Miscellaneous Plants.—Mr. B. S. Williams showed a valuable collection of new and rare plants, among which we observed healthy specimens of the so-called carnivorous plants, Cephalotus follicularis, Dionæa muscipula or Venus' Flytrap, and the Darlingtonia californica; in addition to which we noted the delicately-beautiful Adiantum gracillimum, and some choice Palms, Yuccas, and Azaleas. Messrs. Cutbush & Son, of Highgate, also sent an effective group of decorative plants, consisting of Ericas, Palms, Azaleas, and Conifers, and a box containing about a dozen delicately-striped blooms of Camellia Lavinia Maggi. Beautiful cut flowers of bedding Pelargoniums came from Messrs. W. Paul & Son, of Waltham Cross. For pot culture and for cut bloom some of the best of the varieties shown in this collection are invaluable, especially early in spring, when effective flowers are, as a rule, scarce. Mr. T. Pestridge, of the Boston Park Road Nursery, Brentford, sent twenty varieties of Bronze, Zonal, and Gold and Silver Tricolor Pelargoniums, all in excellent condition. Mr. W. Elliott furnished a group of about a dozen golden-variegated plants in good condition, one of the best being a compact-growing Galium named G. Mollugo variegatum, a kind said to be useful for bedding. Associated with it were also a golden-leaved Dead Nettle (Lamium purpureum var.), and two or three forms of the common Stonecrop (Sedum acre).

For a list of the prizes awarded on this occasion we must refer our readers to our Advertisement columns.

LAW.

William Goss, a gardener, was summoned the other day by Mr. David Sim, a nurseryman at Shepherd's Bush, for leaving his service without notice, whereby he suffered a loss. The question in dispute was whether it was the custom of the trade to give a week's notice. Mr. John Reeves, a florist at Acton, said he employed gardeners at weekly wages. It was customary to give a week's notice. A witness was called who said it was the custom to employ jobbing gardeners, not by the week but by the time they worked. The defendant was sworn, and denied that he had entered into any agreement with the complainant, but said he was to be paid at the rate of 22s. a week. The complainant told him that he could not afford to pay him wet or dry. The complainant, recalled, said he told the defendant that he should require reasonable notice. Mr. Ingham was of opinion that there had been a hiring. The defendant had not given notice and must make reasonable compensation. He ordered the defendant to pay 22s. compensation and 10s. costs. The money was paid.

OBITUARY.

Mr. Giles Munby, whose death took place on the 12th inst., at The Holt, Farnham, Surrey, was a good botanist and cultivator of rare plants. Having resided for many years as a colonist in Algeria, Mr. Munby possessed an extensive knowledge of the flora, and compiled a list of the plants of that country, drawn up in French, and a "Catalogus" in Latin, including 2964 species. He grew many rare plants of North Africa in his garden in Surrey. Occasionally we had the pleasure of receiving communications from him for The Garden, and, quite recently, one on the White-hooped Petticoat Narcissus, and another on the Wood Sorrels.

We regret to announce the death, on the 14th ult., of Mr. Richard Headly, of Stapleford House, near Cambridge. Mr. Headly had attained the patriarchal age of eighty-one, and for nearly half a century his name had been a "household word" among growers of the Auricula, Tulip, Carnation, and Picotee. Of each of these flowers he possessed an unsurpassed collection, and in each he had originated new varieties, which will long perpetuate his work and name. Until prevented by increasing infirmity, Mr. Headly annually assembled the connoisseurs of the Tulip world at Stapleford House during the blooming season, and none who have been privileged to take part in these gatherings will be likely to forget the magnificent sight which his grand collection afforded, or the hospitality and geniality of the host. Mr. Headly was indeed the very type of a genial English gentleman, and by his death Floriculture loses another of those worthies of an earlier generation, who, by word or work, or both, did so much for that branch of gardening.

NOTES AND QUESTIONS—VARIOUS.

Primula ciliata purpurea.—I had this pretty Primrose sent to me under the name of Auricula Madame Vaucher. It resembles Primula intermedia, but its flowers are larger than those of that kind, and of a rich rosy-purple hue. It is a very showy variety.—D.

The Adam Fig.—We have grown this variety for some years, and find it to be a sure cropper, the first fruit seldom or ever dropping off. We can, therefore, always depend upon it. The fruit is large, and pale brown when ripe. It is a kind which should be in every collection.—A. H., *Thoresby.*

Normandy Pippins.—These are prepared by putting peeled Apples in a slow stove or oven, taking them out at intervals, and pressing them between the finger and thumb at the stalk and eye, while the fruit is also turned round, so that the pressure should not be unequal. Why should this operation not be equally well performed in England?—P.

Brook's Liquid Carbolic Soap v. Ants.—I destroyed the other day thousands of ants by means of this liquid. They appeared to be shifting their quarters, as all of them were carrying eggs. I put a very small thumb-potful of the liquid to a gallon of water, and sprinkled them with it, killing them instantly; it mixes with the water at once without any trouble.—R. H. B.

Destruction of Messrs. Boyd's Hothouse Building Establishment by Fire.—Messrs. Boyd's establishment at Paisley was almost wholly destroyed the other evening by fire, the cause of which is at present unknown. It covered nearly 2 acres of ground, and upwards of 150 workmen are for the time thrown out of employment. It is insured for £1000, but it is thought that the damage done will considerably exceed that amount.

Lo! the winter is past, the rain is over and gone; the flowers appear on the earth; the time of the singing of birds is come, and the voice of the turtle is heard in our land; the Fig tree putteth forth her green Figs, and the Vines with the tender Grape give a good smell."

No. 233.] SATURDAY, MAY 6, 1876. [Vol. IX.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

CROSSING AND RAISING FANCY PRIMROSES.

It was my intention to have deferred offering any hints on the improvement of our present races of Polyanthuses and Primroses until the whole of my last year's seedlings had bloomed, but the plants that have already flowered display such an unmistakable advance on those of the previous season as to warrant me in assuming that the experiments which I have made will prove to have been a great success; and as it is possible that others may feel inclined to adopt some of the plans which I have practised, I hasten to communicate them, so as to permit advantage being taken of the present season. During the winter of 1874, my attention was called to that interesting article written by Mr. Darwin, about a dozen years ago, on the sub-diœcious character of Primroses; and I then learned that but for his patient researches we should at the present time be labouring under the gross error of condemning the pin-eyed section, a mistake which has effectually retarded the improvement of three of our most popular hardy plants; and we can even now scarcely say that this error is dispelled, as it is probable that neither the Royal Horticultural Society nor the judges of our horticultural exhibitions would award a certificate or prize to an otherwise perfect flower if it displayed that imaginary defect. Perceiving the great value of Mr. Darwin's discoveries, I gladly availed myself of them, using pin-eyed Polyanthuses and Primroses for the seed-bearers, on account of the ease with which pollen could be applied to them, and because they produce the finest seeds. The pollen was, as far as possible, obtained from Primroses. The object of crossing Polyanthuses with Primroses will be obvious, if we remember that the union of different species usually imparts additional vigour of constitution to the offspring with increase of size and improved form to the flower, besides introducing to the Primrose the endless variations in shades and markings common to the former. But to return to the advantages arising from the seeding of pin-eyed flowers, the first consideration is the facility with which a cross can be accomplished, for if the plant be potted and kept in a still atmosphere free from the influence of insects, no further preparation is required, while a perfect command is established over it. Secondly, if we desire to vary the aspect of our Primrose banks and dells, what is easier than to touch the pin-eyed division with the pollen of our best Primroses and Polyanthuses, to effect a magical change. Again, let us suppose that a florist wishes to supply his customers with better seed than can now be purchased, though he may not be able to afford the requisite time to fertilise his plants, how readily he may obtain superior seed by planting alternate rows of selected pin and thrum-eyed Primroses; or, if he desire to produce Hybrid and Giant Polyanthus seed, he need only substitute Polyanthuses in place of thrum-eyed Primroses. Further, if monstrosities be in favour, then the judicious, mingling of Primroses with inflated calices with hose-in-hose Garibaldi and Pantaloon Polyanthuses will give such a multitude of nondescripts as would baffle the calculations of a very active imagination. To obtain the best results from hybridising, registration is so essentially necessary that too much stress can scarcely be laid on its importance; this object may be accomplished by adopting an easy method that I have practised for many years with great satisfaction, and I can with confidence recommend it to others, for attention to this requirement prevents the necessity of sowing seed that does not quite meet with the approval of the hybridist. For example, this present season my register shows that I have made ninety-seven different crosses, to which number fifty more may be added; but before the seed is ripe a large number of pods will be destroyed, because they will have been superseded by better crosses of superior though similar style. To show how readily registration is accomplished, a page is given out of my book for the present season, the names of the plants having been changed to those with which the public are familiar. Each cross is marked by attaching a distinguishing bit of silk or thread to the flower-stalk of the bloom that has been fertilised. White thread is represented by W T; grey, by G T; black, by B T; black silk, by B S; white, by W S; orange, by O S; gentian, by G T; red, by R S; &c., &c. A few leaves of a metallic paper memorandum-book are prepared by ruling and numbering them, as underneath. The first division receives the number that represents the name of the plant, then follows the name, the other spaces being reserved for the registry:—

1	The Bride	W. T. 7	O. S. 5	R. S. 4		
2	Magenta Ring	G. T. 4	R. S. 7			
3	Mauve Queen	R. S. 7	O. S. 4			
4	Violacea					
5	Auriculæflora					
6	Paper White					
7	Altaica					

Thus No. 1 or The Bride has been crossed with No. 7 or Altaica, and is marked with white thread, &c. &c.

It would be premature with our present limited knowledge of the sporting properties of fancy Primroses to determine precisely what features are essential to constitute a standard flower, and, therefore, for the present considerable licence must be allowed until the peculiarities of colours and marking have been sufficiently studied to enable us to decide what is most pleasing to the eye. For the purpose of deciding this difficulty it may be well to invite opinion to the subject in order ultimately to adopt the happiest suggestions. By way of example, I propose offering my own present impressions, reserving to myself the right of modifying my views as future experience may dictate; but before doing so, I beg to explain that I shall not advocate a single property that has not been attained by myself, though never in entire combination. The conclusions that I have arrived at are that the size ought not to be less than that of half-a-crown, possessing a circular outline and flat surface, with great substance of petal, which latter should be six in number; the eye ought to be small, round, and of a lively colour, or if of a medium or large size then it should exhibit foliated markings of a distinctive colour; possibly a shading of white round the outer circle of the eye may occasionally prove advantageous. The colour of the flower if light should be delicate or bright, or if dark then the colour can scarcely be too intense. Outer margins and lacings represent two distinct and pleasing styles, and may be white or yellow, as they assimilate best with the colour of the flower. Carnation stripes and markings or splashes will probably, when better developed, produce fine effects. Finally, no Primrose should be tolerated that has not a scent equally sweet with that of the Violet or Tea Rose.—A. CLAPHAM, *Ramsdale Bank, Scarborough.*

SPUR PRUNING AND GROUND VINERIES.

I AM a grower of Grapes in ground Vineries, and should like to have the question of spur pruning alluded to in THE GARDEN (see p. 404) more fully ventilated. In my Vinery, 28 ft. long, in four 7 ft. lengths, running north and south, on April 8, 1869, I planted a Black Hamburgh Vine at the north end, according to the instructions in "Rivers's Miniature Fruit Garden." It was planted from a pot and cut down to about 3 ft., the buds being just breaking. It continued to grow vigorously, but during 1870-71 I only allowed three or four bunches to ripen each year, leaving about 3 ft. of new wood at the pruning in autumn. In 1872 I obtained from it fourteen bunches of beautiful Grapes, weighing 15¼ lbs., the heaviest bunch being 1¾ lbs. In 1873 I gathered 19½ lbs.; in 1874, 22½ lbs.; and in 1875, I obtained thirty-seven bunches weighing 39¼ lbs. of beautiful Grapes, the Vine having now filled the length of the Vinery, viz., 28 ft., and the rod being of immense vigour. I certainly feared that I had over-cropped it, although the foliage was of a splendid dark green, healthy character, as it always has been, and I looked with some anxiety to the breaking of the buds this spring, but they have broken splendidly; at every spur there were two or three shoots, but I removed all but the strongest, and every one of these promises to produce two bunches, some of them three. Of course, I never allow more than one bunch to a shoot, and I shorten each shoot to one leaf above the fruit. I have generally begun to cut fruit the third week in September, but its flavour is more fully developed about the middle of October. In the year 1870 I planted a Golden Hamburgh at the south end of my vinery, and in 1873 I gathered 5 lbs. of Grapes from it; in 1874, 6½ lbs.; and in 1875, 12¼ lbs.; all the fruit being of beautiful quality. Now the difference between these two Vines bears very much on the question of spur-pruning, for while the Black Hamburgh seems of almost equal vigour, from the lowest shoot to the one at the end of the rod, the Golden Hamburgh bears its fruit almost entirely on last year's wood, the two shoots at the extremity having two large bunches each, while those on the three-year-old wood show scarcely any signs of fruit; therefore, before cutting back the shoots, as I usually do, to four leaves, I want some of your readers to inform me if it would be better to run up a new cane, even if it were a weak one. My ground Vinery has been quite a source of pleasure to me, and I consider it a great success; but as I have hitherto performed all the pruning and the greater part of the thinning myself, I found the removing of the frames for this purpose a nuisance, and I therefore devised a plan for sliding the frames on angle-irons raised about 14 in. from the ground, and kept at their proper distances apart by iron rods, to which the Vines can be fastened when they require to be raised from the ground. Small brass castors fixed to the bottom of the frames enable me to slide them along either for ventilation or for pruning, and I find them most convenient. In 1874 I obtained two plants of Duke of Buccleuch from Mr. Thomson, and prepared for them as follows:—I removed the angle-iron from the east side of my Vinery, and replaced it with inverted ⊥ iron, and then fixed the angle to the east of that at a distance to receive another set of frames, thus making a double vinery, the bottom of which is laid with thick tiles that retain a great amount of sun-heat. At each end of the second division I planted the Dukes of Buccleuch in May, 1874; and last year I allowed two bunches to ripen on each Vine, 4 lbs. of beautiful Grapes being the result. Although they had not the advantage of artificial heat, some of the berries were very large in size. These two Vines made very fine canes, which were cut down to 3 ft. of that year's wood; and as I allowed 3 ft. of the wood made in 1874 to remain, they are just about 7 ft. long at this time. But here again I find the same thing occurring in the case of the Golden Hamburghs, *i.e.*, they are making most vigorous shoots; but the two shoots at the extreme end of each are not only much stronger than any on the previous year's wood, but they have two large bunches on each shoot, all the other shoots on the same wood being fruitful, while the wood of 1874 has scarcely a shoot which appears fruitful. Now, I should very much like to know if I ought to bring up a cane from the bottom of each cane as bearing wood for another year, or to continue the spur-pruning. E. W.

Worcester.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Early Beatrice Peach.—This is now ripe and in every way excellent while fruit of the Grosse Mignonne, Royal George, and other sorts in the same house and subjected to the same heat, will not be ripe for at least a month to come; although the fruit of the Early Beatrice is not of the largest size, the exceeding precocity of the variety renders it valuable for forcing.—T. Francis Rivers, *Sawbridgeworth.*

Rust in Grapes.—The Grapes this year in my first house have got a little rust on them; will any of your readers favour me with their opinion as to the cause of it? A cultivator upon whom I called one day told me that he had spoilt his early house of Grapes by using sulphur on the pipes, which caused the berries to rust; but that cannot be the cause of the evil in my case, as I have not used sulphur once this year. In my opinion cold draughts are more likely to cause rust than sulphur.—G. H. G.

Hardiness of the Duchess of Oldenburgh Apple.—Mr. Jordan, of Minnesota, states in the "Prairie Farmer" that he has 800 trees of this variety and has not lost one by the cold of the winters there, which is severe enough to destroy most other kinds. He thinks it as hardy as an Oak. It comes into fruit when about six years old, and is an annual free bearer.

NOTES OF THE WEEK.

—— There were large numbers of Apples and Pears shown at the late exhibition at Brussels, and apparently well preserved—such kinds of Pears as have long been past in England. Mr. Jones, of Frogmore, sent a large collection of Apples in good firm condition; among them were samples of Cox's Orange Pippin, looking as well as they usually do in December.

—— The recent consideration by the Botanical Congress, held at Brussels, of the question of a complete catalogue of the plants introduced to European gardens ended in a resolve to bring London's "Encyclopædia" up to the present state of our knowledge. Such a work is much needed, and we wish it all success.

—— The annual exhibition of Rhododendrons and other American plants from the nurseries of Messrs. John Waterer & Sons, of Bagshot (which for upwards of twenty years formed such an attractive feature at the Royal Botanic Gardens, Regent's Park), will this year be held in the grounds of Manley Hall, Manchester.

—— In the "Belgique Horticole" for March is a coloured representation of the Fruiting Duckweed (Nertera depressa), showing how abundantly its brilliant orange-red fruit is strewn over its oval fleshy leaves that lie flat as a carpet on whatever supports them. It is a plant which has been frequently alluded to in our columns, and one which should find a place in every garden. It was introduced by MM. Schiede and Deppe, who discovered it in the temperate regions of Mexico; but it is a plant which, at certain altitudes, has a wide geographical distribution.

—— A tree-like specimen of the bright and free-flowering Malus floribunda is now a dense cloud of flower in Van Houtte's nursery at Ghent. The most striking effect afforded by this valuable tree is before its bright buds are open, but it is scarcely less lovely when in full bloom. It is known to many in England as a bush or small tree, and to these some evidence as to what it is when matured may be useful. It seems to be as vigorous a grower as any of its family, and we, now having seen it in a fairly developed state, do not hesitate to name it as the handsomest hardy flowering tree introduced within the past twenty years. Young specimens of it are procurable in many of our nurseries.

—— Among choice fruits now obtainable in Covent Garden Market are new hothouse Grapes of excellent quality, the varieties being Foster's White Seedling and Black Hamburgh; also forced Strawberries and Melons from English market gardens, Peaches and Cherries from Belgium and France, together with excellent White Calville Apples, and a few samples of Easter Beurré Pears. Smooth Cayenne Pine-apples from St. Michael are also plentiful, and we notice that the finest fruits are now imported on plants in pots just as they are grown. The first cargo of Smooth Cayenne Pines sent to Liverpool in 1868 was imported in this way, and sold as well or even better than home-grown fruit. Among novel or little seen fruits may be classed the Loquat, or fruits of Eriobotrya japonica, which are like small oblong Apples, but of a golden yellow. Chinese Litchees and S. American Sapucaia Nuts are also obtainable, and add variety to the limited list of seasonable dessert fruits.

—— We hear that an International Horticultural Exhibition is talked of for the year 1878. Such an exhibition, worthily done, could not fail to be beneficial to horticulture; but it seems to us that there are good reasons for deferring it to a more distant date. The great French Exhibition takes place in that year, and so do one or more great Continental shows, and it would not be wise to clash with these in the remotest way. English growers should, we think, have the fullest notice of such a project, and three clear years for preparation ought to be allowed. With such notice, we believe the next International Show in England would surpass by far all floral exhibitions ever seen. Nothing can be lost by allowing the fullest time to the growers and to those on whom the heavy responsibility of organising the show would fall. We have so many great shows, both national and international, now-a-days, that nobody can be very anxious for another, unless, indeed, it be a one that may be fully representative of the treasures of our gardens and the skill of our cultivators at the present day. With such timely notice many good cultivators would make special preparations from the beginning of objects worthy of the occasion, and not merely adapt existing, and perhaps often shown subjects, for the competition in question.

—— The fine collection of florists' Tulips formed at great cost by the late Dr. Plant, at Monkstown, near Dublin, is now offered for private disposal, as may be seen by reference to our advertisement columns.

THE INDOOR GARDEN.

THE PANAMA HAT PLANT.

(CARLUDOVICA PALMATA.)

THE Palmate Carludovica, of which the annexed is a representation, is undoubtedly the most elegant species of the genus to which it belongs. During the last twenty years it has acquired vast importance as the source of the fibre used in the manufacture of the true Panama hat. A glance at fig. 1 will give an approximate idea of the beauty of the plant, which should always occupy a prominent position in all collections. The Carludovica was introduced into Europe about the year 1808. It is a native of Bolivia, Peru, New Granada, and Ecuador, and prefers damp sheltered positions in the deeply wooded valleys of that part of South America. It is in general stemless, the leaf-stalks and flowers shooting directly from the root. The leaves, which are mounted on a solid triangular petiole, are palmate and folded like a fan. As they increase in size, they split into three or more divisions. The leaf disc varies in diameter from 16 in. to 30 in. and even more, the leaf-stalk being often 6 ft. or 7 ft. in length. When carefully cultivated, the leaf is of a brilliant green. The flowers, although they do not constitute the chief beauty of the plant, are nevertheless singular in their way. They are monœcious, on the same spadix, the female flower being surounded by four males. The ripened spadix is most remarkable, both as regards form and colour. Fig. 2 (see p. 427) is a good representation of this extraordinary-looking fruit, taken from a ripened spadix which was borne by one of the Carludovicas in the Jardin des Plantes, and which forms the only instance, as far as we ("Revue Horticole") know, of a spadix of this plant ripening in Europe. The spadix, on reaching maturity, breaks up, exposing the inside of the fruit as well as the axis round which it is placed. These parts are of a most brilliant scarlet, which is rendered all the more intense by the strong contrast of the bright green surface of the spadix and of the leaves by which it is surrounded. Could the Carludovica be induced to fruit regularly in our hothouses, the breaking up of the spadix would add an additional beauty to that already possessed by this elegant plant. In Weddell's "Travels in North Bolivia," we find an interesting account of the manufacture of Panama hats from the leaves of this plant. The Bolivians give the Carludovica palmata the name of Jipagapa, a town in the Republic of Ecuador, which is the principal seat of the hat manufacture, "Panama," like "Mocha" in the case of coffee, and "Brussels" in that of carpets, being a misnomer. Before the leaf has begun to open—when, in fact, it resembles a closed fan, it is cut off close to the petiole, the base of which forms the centre of the crown of the hat. It is then divided longitudinally into strips with the thumb nail, the thick part forming the mid-rib being rejected. The number of shreds into which it is divided of course depends on the fineness of the hat into which they are to be manufactured. The split leaf, which is of a greenish-white colour, is next dipped into boiling water, then into tepid water acidulated with Lemon juice, and lastly it is allowed to soak in cold water for some time, and afterwards dried in the sun. Each hat is, or ought to be, made of a single leaf. They vary in price according to fineness, from eighteenpence to as many pounds. The damping and drying operations cause the shreds to assume a curled or cylindrical form which much increases their strength without injuring their pliancy. Before plaiting, the coarser qualities are damped with water, but the finest sorts are left out in the morning dew, and worked on before sunrise. A hat of the finest quality, made out of a single leaf, will take several months to make it complete, and the plaiting will be so fine as hardly to be perceptible at a short distance. The Carludovica palmata is by no means difficult to cultivate, and it is one of the most hardy species of the genus. It grows well in the damp heat of an Orchid-house where the temperature does not fall below 60°. The heat ought to be maintained pretty constantly at this point, for if it be allowed to go much above it, the leaves show a tendency to become darker. The pots containing the young plants should be plunged in tan, without which the leaves will turn yellow and wither. In January or at the commencement of February, they should be repotted in coarsely broken turfy peat, mixed with a fifth part of soft light clayey earth, a mixture which seems to suit them admirably. When the plants are four or five years old, a number of buds begin to develop themselves round the root, which should be separated from the parent plants and placed in a warmed and closed case, and kept from contact with the air until they have taken firm hold of the soil, after which they may be treated as described above. If the plants have received proper care, they will flower in four or five years. The Panama Hat Plant may also be propagated by means of seeds, which should be simply placed on a lump of turfy peat, which must be maintained constantly wet and covered with a bell-glass in a warm place. The seeds generally germinate in about six weeks or two months. As soon as the young plants are sufficiently developed, they are potted off and allowed to remain in heat until they are thoroughly established.

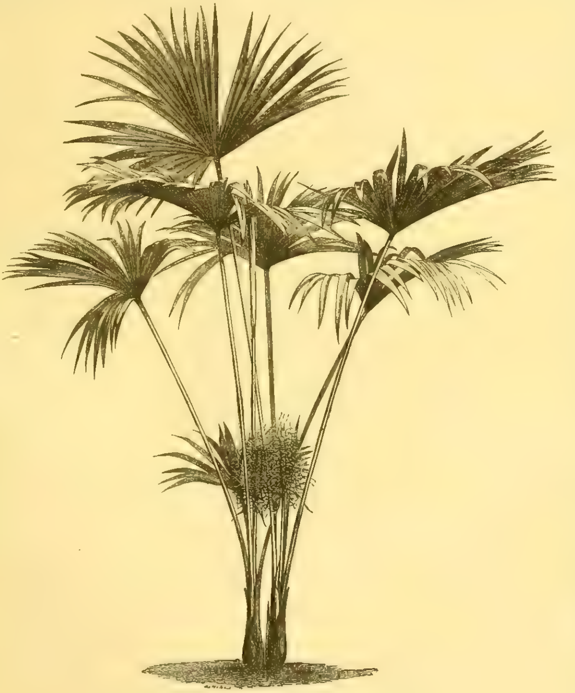


Fig 1.—The Panama Hat Plant (Carludovica palmata).

Like other kinds of Screw Pines, an Order to which this plant belongs, it requires a copious supply of moisture at the root all the year round, but more particularly when it is making its growth. Good specimens of this plant may be seen at Kew, and it is also not uncommon in other good gardens where it is grown for the sake of its elegant fresh green Palm-like foliage.

CULTURE OF ÆSCHYNANTHUSES.

These are handsome free-flowering plants, possessing a very distinct habit of growth; they are mostly indigenous to the hot, damp, woody districts of Java, and consequently require a high temperature. Their flowers, which are scarlet and yellow or deep crimson, are produced freely from the axils of the leaves and extremities of the current season's shoots. In their native habitats they are epiphytal in character, growing on the trunks and branches of trees, to which their roots cling. In a cultivated state they are of moderate growth, and are especially well adapted for pots or wire baskets, suspended in the stove over paths and from the rafters; thus managed they are very effective, and supply a place for which comparatively few plants are suitable. Their blooms are produced in succession during the summer and autumn months, when they form an agreeable contrast to other plants. They flower freely in a small state, and consequently are suitable for either large or small houses.

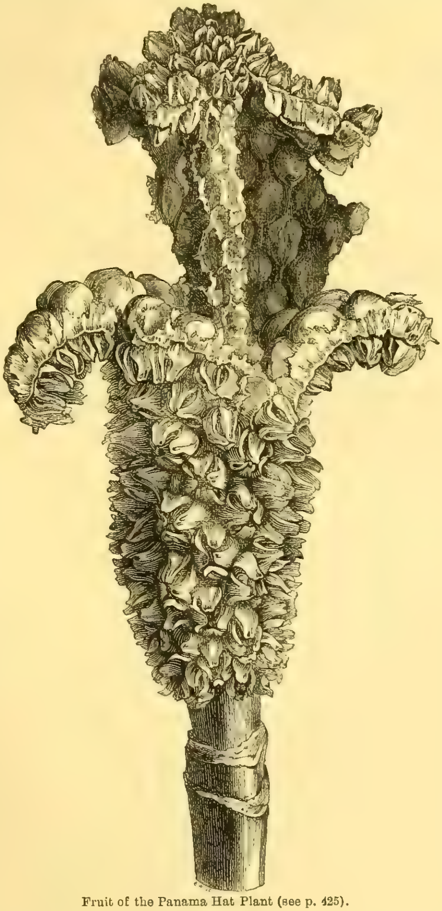
To grow them well they require too much heat to succeed satisfactorily all the year round in an ordinary Fern-house; but, kept in the stove whilst making their growth and until the flowers begin to open, they may then be removed to a conservatory or Fernery; in the latter they produce a striking effect drooping over the green fronds of the Ferns. Half-ripened cuttings of all the kinds taken off in the spring root freely inserted in small pots in half sand and peat, and kept close in a propagating frame or under a bell-glass; they will succeed without bottom-heat, provided the temperature of the house is sufficient to promote growth. Cuttings may usually be obtained in proper condition about the beginning of April, and, if placed in a night temperature of 70°, will root in a month, when they may be gradually inured to the full air of the house, tilting the glasses a little more each day until they can be dispensed with altogether. Pinch out the points of the shoots at a few joints above the base, in order to lay the foundation for the future plant by inducing the formation of several shoots. As soon as the pots are filled with roots, remove the plants into others a couple of inches larger, using fibrous peat, to which add one-sixth of sand and crocks broken small, in equal parts; this will be found to suit the roots better than a closer material. Fill the pots to one-fourth their depth with drainage, as Æschynanthuses cannot endure stagnant moisture, at the same time they require during the growing season an abundant supply of water to the root, necessitating provision being made for its passing freely off. They should be placed on a front shelf, where they will receive a fair amount of light, but they should have a thin shade during the hottest part of the day. As solar heat increases, raise the temperature of the house to 75° at night, allowing it to get 10° higher when the sun is upon the glass, giving air when required, and syringing overhead when the house is closed. By midsummer again pinch out the points of the shoots, which will now begin to assume their natural drooping habit, to admit of which the plants should be set upon inverted pots. Continue to supply them with moisture, heat, and shade during the summer months, again pinching out the points of the shoots about the middle of August. Dispense with shading as the sun declines in power, and cease syringing, giving more air and less atmospheric moisture. Keep them through the winter in a temperature of 60° at night, and a little higher in the day time, giving as much water to the soil as will keep the roots a little moist; at the end of March shift them into pots two sizes larger than those they are in, using the soil in a little rougher state and adding crocks and sand as before, draining the pots in a similar manner. The shoots must not be stopped now, or the time of flowering will be delayed, treat them as regards heat, shade, and moisture as recommended in the preceding summer. By midsummer the early blooming sorts will show flower; the latter kinds, such as Æ. splendens, later on. When the blooms open, the plants may be kept in the stove, or removed, as already stated, to a somewhat cooler house for a few weeks, but they must never be submitted to a cold dry atmosphere. When they have ceased flowering replace them in the stove, and cut back the whole of the growths to within 10 in. of the base. If this be not done, they will get into a straggling condition, with their flowering shoots disposed irregularly, and destitute of healthy young leaves near the base; if the shortening be deferred until spring, considerable time will be lost, and fewer blooming shoots will be formed. The cut-back shoots will break and make some growth before the end of the season, and, if in good healthy condition at the roots, a number of young growths will push up from the base. Keep them through the winter as during the previous dark months, and repot them in the spring, giving them a 2-in. shift; they may either be hung up by wires fastened round the pots below the rim and joined above the plants, or the pots may be plunged in wire baskets, and the space betwixt the pots and the sides of the baskets filled up with Moss, a way in which they look much the best; in this case broad shallow pots should be used. After potting treat them generally as in the preceding summer. This season, if all goes well, they will make many more shoots, and will bear a proportionate increase of flowers. They will also be benefited by manure water once or twice a week. After they have bloomed cut them well in as before; in the spring they may have a portion of the old soil removed, without disturbing the roots too much, replacing it with new material, and returning them to the same pots, if these be deemed large enough; if not, they may be put in others an inch or two larger. In this way they will last for years.

The following are sufficiently distinct to merit a place wherever plants in hanging baskets are desired, viz.:—Æ. grandiflorus, a species which comes from Khoseea, and one which will bear a considerably lower temperature when at rest than the other kinds that have been introduced from Java; its tube-shaped flowers are produced in bunches, and are of a bright scarlet colour suffused with yellow. It blooms in August and September. Æ. splendens is a garden hybrid, produced betwixt Æ. grandiflorus and Æ. speciosus, and is the finest of the strong-growing kinds. Its flowers are produced in bunches of ten or a dozen, and are of the most intense scarlet; the segments being marked with blackish brown. It flowers in the summer. Æ. Lobbianus is a handsome sort, with scarlet flowers, produced in summer and autumn. It is a native of Java. Æ. Boschianus is a distinct and pretty species, also introduced from Java. Its flowers are brilliant scarlet and yellow, and it keeps on blooming for a considerable portion of the summer.

Æschynanthuses are little troubled with insects such as thrips and red spider, as these can be easily kept down by the use of the syringe—their thick leathery leaves being easily cleansed by this means. Mealy bug and scale will sometimes affect them, but these may be kept in check by sponging and a free use of the syringe. T. Baines.

POTTING EPIPHYTAL ORCHIDS.

It is difficult to say what season of the year is best for this operation, the different quarters of the globe from which the plants come, being so unlike each other as regards climate. Even if we carefully study any section of the Orchid family from any given country, and imagine that we can tell the proper growing season for that particular section, although we may be right in the main, we shall find ourselves at fault with respect to certain varieties which, although coming from the same country, have peculiarities of their own which will not permit of their being treated in the same way as the others. Differences in elevation at which plants are found growing affect the treatment to which they should be subjected, those coming from a high elevation bearing much more cold than those from the low lands; it is therefore expedient that amateurs obtaining newly imported plants should ascertain, if possible, not only the country from which they come, but also the elevation at which they were found growing. Again, if we take a single variety, say for example Oncidium Papilio, or the different varieties of Cattleya Mossiæ, which are found growing over a large tract of country in South America, and even in some of the West India islands we shall find a difference in the time of growing and in the amount of heat which the plants require, inasmuch as they retain under cultivation the likes and dislikes acquired by them in their native habitats. A remarkable incident in proof of this occurred about five winters ago when two lots of Cattleya Mossiæ, collected in different localities, were placed side by side in the same house. One lot was almost all killed by the cold, while the other, from a cooler quarter, was apparently uninjured. By far the greater number of Orchids, however, have been found to adapt themselves to our seasons—beginning growth in February, March, and April, sometimes working round to these months gradually, gaining a little each year until they at last come right, while in other cases, as in that of fresh importations arriving in this country in autumn, the young growths, which were about to start when the plants were gathered, are kept in abeyance until our spring time arrives. Spring, therefore, is, upon the whole, the best time for the general potting of Orchids, as at that season the greater part of the plants are growing, or about to do so, and they are in an active condition, which renders them capable of making compensation for any injury which the roots may receive, and, as the plants make new growth and new roots in the spring, it is the best time to give them fresh material to root into; for, if the potting be done in autumn or winter, unless in exceptional cases, any injury done to the plants in shifting must remain until spring before it can be made good, and in the meantime the plants suffer. The material, also, is likely to become impaired before the plants are in a suitable condition to enable them to make use of it; Orchid growers must, however, be guided more by their own judgment than by any rules laid down as to the proper time for potting, for in this they are best assisted by certain indications given by the plants themselves; the best condition for potting being when they are starting into new growth, a circumstance which cannot be too strongly impressed upon the mind of the cultivator, for by always having this rule before him and acting upon it, he will be spared a great deal of doubt and inconvenience; he should examine his plants as often as possible, treating each one by itself, and carefully inspecting it in order to ascertain if it wants potting; if it be in a healthy condition, well rooted, and not in any way cramped, it will be better to work out as much of the old material as possible, and replace it with new; clean the plant, and leave it otherwise undisturbed, for many Orchids, if potted when that operation is unnecessary, are thrown out of flowering until they can re-establish themselves. It is not good practice to pot each plant every year, as many Orchids will remain three or four years in the same pots or baskets if carefully attended to; but on the other hand, in the case of a sickly plant having little or no root, putting it into a small pot or basket, and giving it a frequent change of material in which to grow, rarely fails to produce good results, for after two or three changes, the plant usually starts into growth and does well, particularly if some living Sphagnum Moss be mixed with the peat in which it is planted. The foregoing remarks apply equally to plants in baskets and in pots. Let us now advert to a few of the leading varieties beginning with those which experience has taught us do best in Sphagnum Moss. With the stronger growing kinds, such as Vanda tricolor, V. suavis, Aerides odoratum, A. suavissimum, Angræcum sesquipedale, and others of similar habit, we have no difficulty, inasmuch as they have tall stems, well furnished with air-roots, and do well in pots, the success in cultivating them depending more on the temperature and atmosphere of the house than on anything else. The medium-sized varieties, such as Saccolabium guttatum, S. retusum, Vanda cœrulea, V. Cathcartii, &c., although safer in baskets, may be grown in pots, but more care is required in their management. In crocking pots for them, it is well to fix a good sound log, or a 2-in. or 3-in. unglazed drain-pipe in the crocks, leaving the log one half in and the other half out of the pot; then place the plant against the log, keeping it several inches above the level of the rim of the pot: place some of the lower roots over the top of the crocks and fill in carefully between them with Sphagnum Moss, and some large pieces of charcoal, placing a layer of Sphagnum on the top; water sparingly for a time, and the plant will root over the log and among the pieces of charcoal, and be quite safe without giving much trouble; whereas, if potted in Sphagnum Moss alone, the utmost vigilance will be necessary to prevent it from becoming sodden. Dwarf-growing kinds, such as Saccolabium curvifolium, S. ampullaceum, Vanda cristata, V. cœrulescens, and all the varieties of Phalænopsis, I would strongly recommend to be grown in baskets; they are so easily grown in that way, and so difficult to manage in pots, that none but experienced Orchid growers should attempt their culture in pots. The above-named varieties, and others of similar habit having large air-roots, have been found to succeed best in Sphagnum Moss and charcoal, but it is by no means impossible to grow them well in either peat or in a mixture of peat and Sphagnum Moss. Good fibry peat, without any other mixture than a few lumps of charcoal, is the best for the stronger - growing Cattleyas, Lælias, Oncidiums, Brassias, and Epidendrums, and these plants do well in pots, but some of the smaller growing kinds, such as Oncidium bifolium, O. Phalænopsis, Cattleya superba, C. bulbosa, Lælia acuminata, L. præstans, and indeed any of the varieties known to be delicate, had better be grown in baskets or on blocks, care being taken to give them a copious supply of water during the growing season. Miltonias, Odontoglossums, Lycastes, and most of the other epiphytal Orchids from South America, not previously mentioned, thrive best in a mixture of equal proportions of good fibry peat and living Sphagnum Moss; the latter, by growing with the plants in the proper season, helps to maintain a uniform amount of moisture which is beneficial to all


Fruit of the Panama Hat Plant (see p. 425).

Orchids, and absolutely necessary in the case of the New Grenada Odontoglossums. Most of the Dendrobiums, particularly those of the crassinode (D. Falconeri), and the nigro-hirsutum (D. formosum) sections must be grown in baskets or in suspended pots, so that they may have plenty of air. In this way they are easier to keep in health, and surer to flower, than if they were placed on the stage. Stanhopeas, Gongoras, Acinetas, &c., which push their spikes downward, some of them through the bottom of the basket, should never be grown in pots, or the beauty of the plants will be lost. It will therefore be seen that the principal requisites for Orchid potting are clean, living Sphagnum Moss, good fibry peat without soil, and pure charcoal; years ago it was the custom to scald the Sphagnum Moss, in order to kill the insects that might be in it, but it is now generally admitted that the benefit derived by its being in a living state more than counterbalances any drawback arising from the presence of a few insects which may afterwards be caught if carefully looked for and destroyed. The peat, which should be rather dry, should be broken with the hand into lumps, and the finer portions sifted out and thrown aside. Charcoal being good for all Orchids, may be used at discretion. During these last few years it has become customary to mix silver sand with the peat, &c., used for potting, a practice probably based upon the fact that certain varieties are said to have been found growing on rocks. I have tried the plan, and have in no instance found it beneficial to epiphytal Orchids, and in many cases it has proved to be injurious, the sand having become incrusted on the tender points of the roots, distorting and otherwise injuring them. It will be found to be better to rely on the materials which I have recommended, and to avoid any admixture whatever of sand. Another important matter is to prepare the plants which it is intended to pot by withholding water from them for several days before the operation takes place; the drier the plant is the better, for the roots will be the more pliable and less liable to injury; but if the plant be far advanced in growth, water should not be withheld long enough to check it; after potting, it should be watered but sparingly for some time, as it is found that if it be kept moderately dry, the young roots rapidly push themselves out in all directions, apparently in search of moisture. Some are in the habit of using pegs, either of wood or of wire, to keep the top layer of peat, &c., on an Orchid-pot in its place; but the wooden pegs, by rotting, often injure the plant, and the wire ones always injure any roots that may happen to grow against them; besides, such appliances are altogether unnecessary, for if the material be used in suitable lumps, and in finishing off a plant the top layer be commenced close to the plant and worked outwards towards the rim of the pot, the pieces last added round the edge will effectually hold the others in their places. The upright pot-like basket (invented, I believe, by Mr. Dominy) will be found to be excellent for growing medium-sized East Indian Orchids in, as, thus circumstanced, they will have all the advantages of plants in baskets, and may be placed on the stages as if they were in pots; it is made of Teak, and so constructed that air can circulate freely under the plant and amongst the roots. Wire baskets should never be used for Orchids. Odontoglossums of the O. Alexandræ class do not object to having the base of one or two of the back bulbs slightly under the Moss; but Cattleyas, Lælias, Oncidiums, and almost all other Orchids having pseudo-bulbs, should never have any portion covered by the material in which they are potted except the roots.

James O'Brien.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Marie Louise Violet.—Those who have hitherto written upon the culture of Violets in The Garden have omitted all mention of this exceedingly fine variety. I have grown it for these last two years, and it is considered to be greatly superior to other varieties cultivated here, among which are the Neapolitan, King, Brandyana, The Czar, and Victoria Regina. If a little covering be given, there will be no cause for complaint as to short stalks for bouquet purposes.—J. Allan, *Ashurst Park, Kent.*

Ixora regina.—This attractive variety produces dense trusses of violet-salmon-coloured flowers. It is of a dwarf, compact habit, and the flowers are of a deep and lovely shade of colour; the trusses are somewhat similar in shape to those of I. coccinea, but the plant is more compact than that variety. —B.

THE FLOWER GARDEN.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Among the handsomest of hardy flowers now in blossom are the Irids, and among these some seedlings from Iris suaveolens or I. olbiensis are strikingly beautiful. Their colours vary from pale yellow to purple, blue, and white; some are dwarf in habit, like I. pumila, others are nearly as vigorous as I. germanica. The dark velvet-like flowers of the common Snake's-head Iris (I. tuberosa) are likewise now opening, as are also those of I. sibirica and the great dark-speckled I. susiana, one of the largest and rarest of all Irises, and one of the most peculiar as regards colouring. Some seedling Globe-flowers in a large bed in Messrs. Ware's Nursery at Tottenham are also just coming into bloom, their colours varying from yellow to deep orange. Among the more distinct hardy species of Tulips, T. Eichlerii, T. retroflexa, and the slender-petaled T. cornuta have come into bloom during the past week, and the rich orange-scarlet T. Greigii is still very showy. Both the rosy and white-flowered forms of Dielytra spectabilis are now in flower in the open border, with their near relations, the Corydalis and Fumarias. Among late-flowering Narcissi, we have noticed the N. muticus, of Gay, a singular-looking form of the Common Daffodil, from the Pyrenees, the cup of which is perfectly cylindrical, and nearly 2 in. in length, and the segments of the perianth are more spreading than those of the Common Daffodil. N. intermedius and its orange-cupped ally N. intermedius bifrons are also now fairly in bloom, as is likewise the Silver Jonquil (N. tenuior), the flowers of which are of a delicate lemon-yellow colour when they first expand, but which afterwards change nearly to white. N. gracilis is also flowering freely, and is one of the most fragrant of all Narcissi. Among Primroses may be mentioned P. intermedia and P. viscosa var. grandiflora, two kinds now in unusually beautiful condition. P. nivalis, a delicate white-flowered form, is also very pretty on the rockwork at Kew, associated with the miniature Scotch or Bird's-eye Primrose, P. scotica—the last with rich violet-purple flowers, each having a yellow rim round the eye. Two of the most effective of all Primulas now in bloom, however, are P. cortusoides and its variety P. amœna, both in excellent condition, at the Hale Farm Nurseries, Tottenham. The dwarf kinds of Phloxes are now beginning to open their flowers on sunny banks. During the past week P. procumbens, a deep rosy-flowered kind; P. divaricata, a delicate blue sort; P. setacea atropurpurea, a dark-flowered form of the type; and some large tufts of the snowy-white P. Nelsoni, have all been in great beauty. Saxifraga hypnoides is now studded with silvery blossoms, as is also the double-blossomed variety of S. granulosa. Veronica repens, creeping over sloping banks and rockwork, is thickly covered with pearly-white flowers, somewhat resembling those of Saxifraga Burseriana, but smaller. The Silver Rod (Asphodelus albus) is likewise now opening its flowers on spikes a yard or more in height. Cyclobothra cœrulea is blooming freely at Tottenham, as are also the North American Cowslips (Dodecatheon Meadia and D. integrifolia), and a new species from California bearing large panicles of slender purple flowers. The double-blossomed form of Cardamine pratensis is just coming into bloom, as is likewise the still more chaste Ranunculus aconitifolius fl.-pl., the double white flowers of which are as large as a shilling, and the sub-shrubby glaucous-leaved Othonna cheirifolia is studded with golden-rayed flowers. One of the most conspicuous of all the species of Ornithogalum is O. nutans, which has greenish or greyish-white blossoms, not unlike those of a Yucca in shape, eight or ten being borne on a stout spike. All the forms of Snake's-head (Fritillaria Meleagris) are still attractive, and F. pyrenaica is now fairly in flower; here and there Lychnis alpina is forming bright rosy patches in London gardens, and is, perhaps, the smallest species in the genus; while tufts of Bellidiastrum Michelli are also studded with large Daisy-like flowers. The Musk Hyacinth (Muscari moschatum) is now in fine condition, as are also several of the Forget-me-nots, including Myosotis alpestris and the delicate blue M. dissitiflora. The elegant-habited Lilium tenuifolium is showing

Alpine Forget-me-not (Myosotis alpestris).

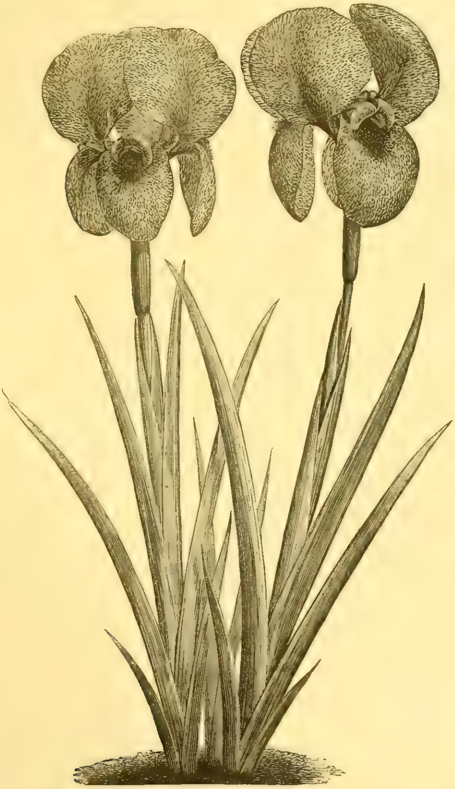
Snowy Primrose (Primula nivalis).

Musk-scented Grape Hyacinth (Muscari moschatum).

Single Jonquil (Narcissus Jonquilla).

Sulphur Narcissus (Narcissus intermedius).

Dwarf Iris (Iris pumila).



Great Spotted Iris (Iris susiana).

Scotch Primrose (Primula scotica).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

colour in sheltered positions, but as yet it can scarcely be said to be in bloom. The charming little Bird's-foot Violet (Viola pedata) is very pretty, and its variety, V. bicolor, in which the three lower segments are white and the upper ones dark purple, is even still more conspicuous.

SELECT VARIETIES OF DOUBLE DAISIES.

So various are the sorts of Double Daisy now in cultivation, that a charming floral parterre might be made by means of them alone, or one large bed devoted to them might be made to produce an exceedingly effective display. If such a bed were round in shape, it might be filled as follows:—The outer circle to consist of the white-flowered Variegated Daisy, next which should be an inner line of the red-flowered kind; then a centre six-pointed star, consisting of a mass of the large White Daisy in the middle, the angular points being filled with the Blood-red variety; the six intervening triangles abutting on to the outer ring might be filled two each with distinct pink or rose-coloured kinds; this arrangement would be at once simple and good. So far, Daisies are rather limited in colour, consisting exclusively of White and Red, either selfs or in combination; but these combinations produce, nevertheless, a great variety—much greater, indeed, than is usually supposed to exist among Daisies. Putting aside for the present the variegated kinds, I find four distinct white sorts, and singular enough, these go in couples, for two are a larger and a lesser quilled white, and the others are larger and smaller flat-petaled whites; the flat-petaled is the oldest form, and the finest is the Giant White, a really excellent kind, having large full flowers pure in colour, and borne on long stems. This kind is well known in our London markets. The Common White has smaller flowers, and these usually have defective centres that militate greatly against their beauty; the stems, also, are shorter and the foliage rounder than those of the other. I do not think that any one would care to grow the latter, if they had the Giant variety. Not less remarkable as regards size and excelling the Giant in the density of its petals is the White Globe, a superb Daisy, fine in form and robust in habit; this, however, is a quilled kind, and therefore quite distinct. It is most useful to gather from for various purposes, and its flowers would not be despised even in a bouquet. A lesser kind I have obtained under the name of Queen of Whites, but the title is far too pretentious; this is also a quilled form, but the flowers, though good, are not pure, and altogether the kind is not equal to White Globe. The pink and rose-tinted kinds are more numerous, and comprise both quilled and flat-petaled kinds, one of the best known of which, no doubt, is the old Hen and Chickens. This is a pretty pink-flowered kind, and for a short time is very effective, but directly the "chickens" are developed it becomes more curious than beautiful, and is therefore entirely unfitted for bedding purposes. The best of the flat-petaled pink kinds is a variety that has petals with a white base and pale inner surface, the backs being rosy pink. This, when well grown, produces handsome flowers, some of them as compact as those of a Ranunculus, and owing to this cause it has from one source received the title of Ranunculoides; it is also known as the Belgian Daisy, but I prefer the designation under which I got it from Bedfordshire, viz., that of Rosy Gem. Another kind, from the same county, bears the name of Pink Beauty; this is a close-quilled kind, but shows the eye too much; its colour is rosy pink. The finest of the quilled flowers is the true old Mottled Daisy, now known as Early Gem; it produces large dense flowers borne on stalks of medium length, and is useful for furnishing cut flowers. Its petals are not so closely quilled as in the case of some flowers, and being red on the outside and white within, a curiously mottled bloom is the result, pink being the prevailing hue. It is very early and robust. Closely allied to this is Pink Queen, a less robust variety, but one which flowers freely and early. Its blossoms resemble those of Early Gem, but are not so large, and the petals are more closely quilled. It would probably make a good plant for edgings. Reds have four distinct representatives, the palest of which is called the Gem; the next deepest colour is the London Market Red; deeper still is the Blood-red, or, as it is sometimes called, the Sweep; and darkest of all, quite a blood crimson, is Bacchus, a variety that has a distinct creeping habit, and medium-sized flowers born on long foot-stalks. All the flowers in the red section are quilled; the size of the blooms depends materially upon the quality of the ground in which they are grown, for as a rule I find that Daisies prefer good rich soil to poor ground. For bedding purposes I should prefer the Gem and the Blood-red as presenting the best habits of growth. The old Crown-flowered Daisy is still largely cultivated by market growers, owing to the robust character of the plant and the great size of its flowers. It is not liked as a bedding plant, because the centre of the blooms is usually hard and green until the flowers are nearly developed, when the inner petals expand, and a fine tufted or crown flower is the result. This also is a quilled variety, the petals being red and white, and the flowers present a mottled appearance, varying in character on many plants, just in proportion as the quilling is more or less dense. The foliage is large, round, and woolly, and easily distinguished. There has recently been sent out six varieties, under the names of Albert Edward, Albert Victor, Masterpiece, and others, all evidently seedling reproductions of the old Crown Daisy. I have these now in flower; I also flowered them last year, and I must say they are no advance upon old kinds. A few words remain to be said about that very pretty and interesting section, the Variegated Daisies. First, and perhaps the most effective among these is the well-known red-flowered kind, called Aucubæfolia, so named because of the resemblance which its foliage bears to that of the Variegated Aucuba; this is a sport from the dark-red green-leaved kind, but, as might be anticipated, the variegated form is the less robust of the two. It is, however, sufficiently vigorous to be easily grown, and during the winter, before its flowers appear, its foliage is most effective. From this has also sported a pink-flowered kind, but in all other respects a duplicate, sometimes sporting back again, and, singularly enough, always so when the leaves lose their variegation. Flower of Spring is said to be a kind raised from seed. Its flowers are of a French-white tint, but the foliage is robust and well-coloured, being more veined than blotched. And, lastly, B. globosa variegata is a genuine sport from the White Globe, its flowers being pure white, and the foliage much blotched with yellow. The variegated kinds lose colour in summer, but regain it in winter. The above enumeration comprises all the garden double Daisies that I possess, or have met with. Any further information respecting them from other growers will be most acceptable. A. D.

Columbines as Biennials.—I would suggest that all the Columbines, except the common one, should be looked upon as biennials rather than good persistent perennials. The seeds should be sown early in spring, and the young plants pricked out into pans or into an old garden frame as soon as they are fit to handle, removing them early in August to their permanent positions; select a cloudy day for the work, and give them a little artificial shading for a few days after the operation has been performed. Carry out the same process year after year, the old plants being discarded after flowering. Any attempt at dividing the old roots is usually attended with a very small amount of success.—J. C. Niven, *Botanic Garden, Hull.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

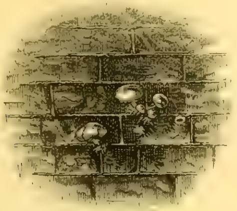
Miniature Floating Islands.—The following is a notion respecting which any suggestion from your readers would be thankfully received. We have in the cottage garden a large open tank to catch rain-water from the orchard-house roof, and wanting to utilise this we have put in a strong raft rising and falling with the water. We propose placing on this a number of water plants in pans, and are beginning with the lovely Bog Bean; probably the Huntsman's Cup (Sarracenia purpurea) would thrive under this treatment.—G. F. Wilson, *Heatherbank, Weybridge.*

Scutellaria macrantha.—In the last issue of The Garden I observe that a comparison is drawn between the value of the desirable hardy Skullcap and S. Mociniana, to the advantage of the latter. I have not a word to say in its depreciation, but surely the writer has done scanty justice to the former species by comparing it with a stove, or, if you will, a greenhouse species. I cannot imagine that the two plants can ever fairly be brought into competition with each other, belonging, as they do, to distinct sections of the genus. The S. macrantha would be quite out of place in the stove, and certainly no one would dream of planting its Mexican congener in the open border.—W. T.

THE KITCHEN GARDEN.

MUSHROOM GROWING ON A BRICK WALL.

WHEN in Lord Londesborough's garden at Norbiton recently we witnessed a singular phenomenon—several groups of well-grown Mushrooms growing from the face of a brick wall at about 5 ft. from the ground. The spawn was also visible spreading about in gracefully woven webs. The wall was covered, and in a dry shed, had ordinary mushroom beds placed against the other side, and from the uppermost of these the spawn had spread through the wall and produced excellent Mushrooms from the dry face of the wall. The wall is not even an old one, as the whole of the structures in the garden are of recent date. This seems one of the most interesting facts in connection with Mushroom growing, and not without its value from a cultural point of view. V.



TRUFFLES.

AN article in THE GARDEN (see p. 417) on Truffle-growing in France induces me to offer a few remarks on this interesting subject. This highly-prized Cryptogam is only found sparingly in some of the southern counties of England; but in all young Oak plantations growing on calcareous soils, there is little doubt but that it might be successfully cultivated. In 1843 I commenced here an experiment of trying to induce Truffles to grow in a young Oak plantation near the lake, by getting all the parings and over-ripe ones from the kitchen and planting them in it. The soil of this Oak plantation had originally come from the bed of the lake, and was full of the shells of small fresh-water molluscs, so that it was of a calcareous nature. Wherever the old Truffles were planted I took great care that the Oak leaves should not be disturbed in the autumn or winter, in order that they might form a shelter for the young Truffles when growing. The first indication of the success of my venture was the fact of ripe Truffles being found in the places where the old ones had been planted by the squirrels scenting them out and scratching them up to eat. I forwarded a fine specimen, weighing more than ½ lb. after having a piece cut off the top by the scythe of a mower, to the late Prof. Lindley, who pronounced it to be a veritable ripe Truffle. This plantation was afterwards protected and well attended to, and sometimes as many as from 2 lbs. to 3 lbs. of Truffles were dug up at a time when wanted for the kitchen. In digging for them there was, however, a great loss, for many of the small unripe tubers were destroyed by the spade from not having Truffle dogs to scent out those only that were ripe. Afterwards, from alterations in the grounds, this Truffle-producing plantation was destroyed, and there was an end of the crop, for the ground they grew on was raised 4 ft. higher. Where young Oak plantations are growing on calcareous soils, there is therefore little doubt but that the artificial cultivation of Truffles may be successfully tried in this country. Our climate may not be so favourable as that of France, but there is no danger of our severest winters injuring the young Truffles growing beneath Oaks or other trees, if the leaves be allowed to form a shelter for them, and no digging or disturbing the soil in hunting for them must be attempted after November. WILLIAM TILLERY.

Welbeck.

Conover's Colossal Asparagus.—Like Mr. Grieve (see p. 418) I find this variety far surpasses the ordinary kind during its earliest stages of growth; several beds planted with one-year-old plants of it last year are now sending up the finest growths I ever saw from plants only two years old; but of course, if they do not maintain this superiority for a number of years, their value will be materially diminished. Such large quantities of Asparagus are, however, grown for forcing purposes only that it is a great advantage to grow a variety that will attain sufficient strength for producing good heads at two years of age, thereby saving one year's growth, the old variety requiring three years to be fit for the purpose.—JAMES GROOM, *Henham.*

NEW POTATOES IN SUCCESSION.

IN order to meet the demand which I have for new Potatoes I plant at four different times. On the south side of our forcing-ground is a dwarf wall 120 ft. long; I put up a corresponding fence 4 ft. high, leaving a space 10 ft. broad between them. As soon as the leaves fall in autumn I get a great quantity raked up in the woods and fill this space cram-full, treading them down well, and making allowance for their subsidence by building them up to 5 ft. high. On this I place some three-light boxes, and into these I put a foot of rather light soil. The Potatoes are planted immediately, and by care in keeping the lights well covered up new Potatoes are obtained by the second week in March. As fast as they are dug French Beans (Osborn's Forcing I like best) are planted; these afford us a capital supply during part of May and June, after which comes a crop of Vegetable Marrows. In November I get in my second batch of Potatoes, using a brick pit with good lights; no bottom-heat is used, but a good depth of soil is allowed, and the tubers are planted 8 in. deep. On the top are planted Lettuces, which were sown the third week in August; these are very useful for salads during March and part of April. The Potatoes in this pit afford a capital crop in April and May, after which the space is planted with, or rather is occupied by, Tomatoes in pots plunged, and these ripen perfectly. My third lot is planted in a similar manner about Christmas; and, after planting, Endive is put in, to be used in inclement weather. These Potatoes are dug in May, when the pit is filled with Basil, Marjoram, and other tender herbs. The fourth crop I am not able to plant till the 1st of February, but as soon as planting is finished a crop of Radishes is sown, and these are off before the Potatoes very materially interfere with them. This lot comes in in June. As soon as this crop is dug I have some old whole sets ready to plant, and after the soil has had a thorough watering of liquid manure I plant again and put on the lights, placing a brick under each corner of the light, which insures a thorough circulation of air. This crop must never have a drop of water after planting nor have the lights taken off. There is no fear of disease (says Mr. Rust, in the "Florist,") if this be attended to. When winter comes the lights are closed down and the crop is left undisturbed till Christmas, when they find their way to the table as new Potatoes. I must mention that nearly half my lights are covered with sheeting at 8½d. per yard, and two yards wide; this, when stretched tight and well oiled, answers capitally as a protecting material. I may add that the only Potato I grow is Veitch's Improved Ashleaf Kidney.

Vermont Beauty Potato.—This has proved here to be a most excellent late-keeping variety; to-day I have had a dish of it cooked and I have never eaten a better Potato. I mentioned some time ago that this is one of the best of the American kinds, aye, and of English sorts, too. It is also a handsome Potato; that coarseness both in haulm and root, so general in the American Potatoes, is quite wanting in Vermont Beauty. Its comparative freedom from disease, its short haulm, heavy crop, and early ripening and late keeping properties all contribute to make it one of our best garden Potatoes. It has the clean smooth surface of the best of English-raised Potatoes, and in many other respects leaves them a long way behind. Snowflake kept along with Vermont Beauty is not nearly so good.—J. TAYLOR, *Hardwick Grange, Shrewsbury.*

Fish Net Protections for Fruits and Vegetables.—I find that wall fruit trees, protected by means of double fish nets supplemented by light evergreen branches, have set abundant crops of fruit. I also find light coverings of this kind to be of considerable benefit to the earliest crops of vegetables, such as Carrots, Radishes, Turnips, Lettuces, &c.; such coverings break the force of the wind, which is far more trying to tender early vegetable crops than the amount of frost that we generally experience during the spring months. They must be supported on a temporary framework, at least 1 ft. above the plants covered; and during severe weather the amount of protection is easily increased.—J. GROOM, *Henham.*

Bitter Cucumbers.—I planted some Telegraph Cucumbers in a hot-pit, the bed of which was prepared in the usual way, and warmed with hot water. The shoots and leaves look healthy and strong and the Cucumbers are numerous, but so intensely bitter that it is impossible to eat them. The plants are trained under the roof. Can any one tell me the probable cause of the bitterness of the fruit?—G. G.

PLATE XIX.

THE SALVIAS, OR SAGES.

(WITH A COLOURED FIGURE OF SALVIA FARINACEA).

The Sages constitute one of the most natural and easily recognised genera in the vegetable kingdom, and yet they are exceedingly numerous, and diverse in duration, in the size and shape of the leaves, and in the colouring of the flowers. By one character alone any species of Sage may be distinguished from the species of any other genus of plants with two-lipped flowers. This is the singular structure of the stamens, of which there are only two in each flower. The filaments are branched, and the anther-cells are borne on separate branches. But I may make it plainer by quoting Mr. Bentham, who is the principal authority for this family of plants. "Stamens really two, although easily mistaken for four, for the anthers have a long slender connective, having the appearance of a filament, fastened by the centre to the very short real filament, and bearing at one end a perfect anther-cell under the upper lip of the corolla, and at the other end a small cell almost always empty, and usually much deformed." So much for the botanical character of the Sages, which, as may be gathered from the foregoing, are more easily recognised than almost any of the numerous genera of the family to which they belong. But it is not so with the species, for they number some five hundred, and are only separated into sections by floral characters less readily understood. These sectional characters are given below as a guide to the determination of a species, though in order not to scare away those readers who are not versed in botanical technicalities, but who may love flowers better than the most accomplished botanist, it has been thought desirable not to give full botanical descriptions of the species. The chief characters by which they differ from their allies are mentioned, followed by their general appearance, duration, height, colour of flowers, native country, and other interesting particulars. The history of the cultivation of Sages dates back to a remote period; several of the European species were esteemed for their actual or supposed medicinal properties. The Common Sage (S. officinalis) does not appear to have been used for seasoning at an early date; not even so far back as Gerarde's time, or he would most likely have mentioned the fact, but it was cultivated in gardens for its healing virtues. Miller describes a number of species, and several are figured in Dillenius's "Hortus Elthamensis." Sweet, in his "Hortus Britannicus" (1830), enumerates 141 species as being, or having been, in cultivation; and Loudon, a few years later, catalogues 124. Probably not one-half of these are now to be found in British gardens, and certainly not more than one-tenth of them are commonly grown, owing to the wide-spread mania for "bedding-plants." Of course, every one has a right to please himself or herself as far as possible; and if a person choose to have his flower-beds and borders empty nine months out of the twelve, there is only the law of good taste, which nobody is bound to heed, to prevent him. What may be in place, or at all events tolerated, in a portion of a large garden, is wholly unsuitable and unsatisfactory in a small one. But, without intending indiscriminate condemnation of any particular style of flower-gardening, or any particular class of plants, a word may be said in favour of those beautiful, and at the same time pleasant, homely, and natural, herbaceous plants (some of the Sages among the number) that in days gone by were more commonly seen than they are at the present time. Even the cottager, with his rod of flower garden, must imitate his wealthier neighbour, and plant Pelargoniums, which are certainly very beautiful plants, though not hardy. But the worst of it is, the charming old occupants of the cottage garden have been rooted up to make room for their more fashionable rivals, and a long time will doubtless elapse before we shall see the like again. Fortunately there are indications of a gradual change in this respect, and we may hope to see hundreds of different kinds of plants tastefully arranged, where we now see thousands of the same variety or a few varieties crowded together. There is scarcely any limit to the number of hardy species from which we may choose without troubling ourselves with those of too delicate a constitution to bear our climate if left to themselves. This is abundantly proved by the genus now under consideration, and many others already reviewed in The Garden. Salvias are found in almost all sub-tropical and temperate countries, but they find their greatest concentration in certain regions of the northern hemisphere, notably in the mountains of tropical America, and in the countries bordering the Mediterranean Sea. Two species are found in Britain, though one, S. pratensis, is exceedingly rare, and the other, S. Verbenaca, is very rare in Scotland. One species, the very widely-diffused Asiatic S. plebeia, is found in Australia. A considerable number of shrubby species occur in South Africa; a few, not very showy ones, extend to China and Japan; and there are several in the mountains of North India. The best hardy ones are from the Mediterranean region, and the showiest from the mountains of tropical America, especially Mexico. Few, if any, of the Mexican species are really hardy, but many of them are amongst the best ornaments of the conservatory and greenhouse during the autumn and winter months, and others are exceedingly effective in our beds and borders during the summer. In making a selection, several species which have been in cultivation are omitted, and a certain number of others not yet in cultivation have been added in a second list. Doubtless many of those included in the first part are no longer to be found in our gardens. Amongst perfectly hardy perennial species, or those requiring only a little care in the selection of a suitable soil and situation, the following may be named:—S. Candelabrum, violet-purple and white; interrupta, blue and white; scabiosæfolia, white; pratensis, white, blue, and scarlet varieties; dichroa, blue and white; and carduacea, lilac-purple. The last is probably a biennial. Of greenhouse species we mention S. farinacea, leucantha, violet and white; splendens, scarlet; ianthina, dark violet; fulgens, scarlet; Grahami, crimson; Heerii, scarlet; elegans, crimson; albo-cœrulea, white and blue; patens, blue; tricolor, white, violet, and vermilion; and porphyrantha, crimson. To enumerate all the ornamental species of Salvia would be to include at least 400 out of the 500 known, for almost every species possesses some peculiar grace or charm of its own, and many very fine species remain to be introduced. S. longiflora, for example, described below, surpasses, judging from dried specimens, anything in cultivation. Indeed, of the 200 to 300 American species, nearly all are not merely pretty but showy plants. Respecting the culture and propagation of Sages, little need be said, for few of them require special treatment. The herbaceous perennials may be rapidly propagated by division or from seed, and the half-shrubby species are as easily propagated from cuttings of the young soft shoots in heat.

The following is a selection of species which are, or have been, in cultivation:—

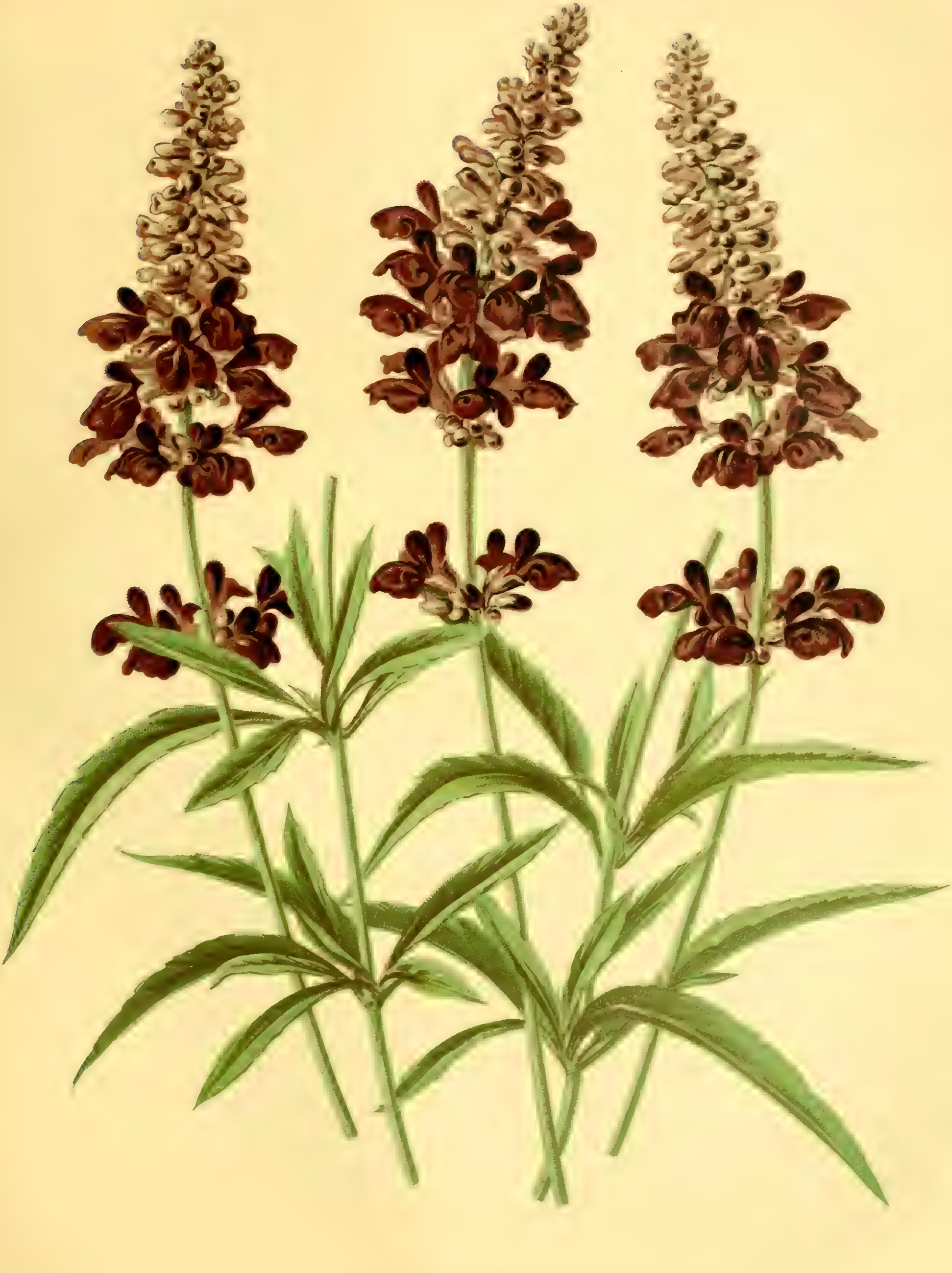
I.—Eusphace.

Calyx campanulate; upper lip three-toothed or nearly entire. lower lip bifid; all the lobes sharp-pointed, not increasing in size after the fall of the corolla; tube of the corolla broad, furnished with a hairy ring inside; upper lip erect, lateral lobes of the lower lip spreading or reflexed. Herbs or under-shrubs, natives of the Mediterranean region and Central Asia.

1. **Candelabrum Sage** (Salvia Candelabrum), Bot. Mag., 5017.—A half-shrubby species with leaves resembling those of the common Sage. It differs from all the others noted here in its regularly three-branched paniculate inflorescence, which suggested the specific name. The flowers are large and beautifully variegated with purple and white, the broad lower lip being almost wholly of a rich violet-purple. The style projects considerably beyond the shorter concave notched upper lip. This magnificent species is a native of the mountains of the South of Spain, at an elevation of 2500 ft. to 3000 ft., and is said to be quite hardy in this country. Mr. W. Thompson, of Ipswich, imported it about 1856.

2. **Irregular-leaved Sage** (S. interrupta), Bot. Mag., 5860.—A tall hardy herbaceous species, with a woolly, almost woody, stem; large irregularly pinnately-lobed leaves, 6 in. or more in length, and showy blue and white flowers. This is a very free-flowering ornamental species. It was in cultivation at Cambridge as long ago as 1798, and was re-introduced by Mr. Maw from Tangiers, in 1869. The tube of the corolla is short and inflated, and tinged with purple; the upper lip is short and notched in the centre, and the lower one has a very broad terminal notched lobe.

3. **Dandelion Sage** (S. taraxacifolia), Bot. Mag., 5991.—A very showy plant, with leaves resembling those of the Dandelion, and erect



spikes of large flowers in numerous clusters or whorls of six to ten each. Strong plants attain a height of 18 in., with flower-spikes 6 to 8 in. long, bearing six to eight whorls of purple, yellow, and white flowers. The corolla has a short broad tube and large gaping lips, the lower one, larger than the upper arched and concave one, is furnished with two large yellow spots and dotted with purple. A native of the Greater Atlas, collected by Dr. Hooker and Mr. Maw in 1871. It grows on rocks and shingle, and requires protection even on a rockery in this country.

4. **Scabious Sage** (S. scabiosæfolia), Bot. Mag., 5209.—A most distinct species, the leaves, as the name indicates, being divided into narrow segments. The large white flowers are borne in distant whorls. The tube of the widely gaping corolla is short, and the central lobe of the long lower lip is much larger than the lateral ones; the outside of the upper arched lip is tinged with red and clothed with long hairs, and the lower lip is more or less spotted with red on the upper surface. One of the best of the perfectly hardy species. It is a native of Armenia and Tauria, and was introduced into this country in 1798. There is a poor figure of the same species in the Bot. Mag., 1429, under the name of S. Habliziana.

II.—Hymenosphace.

General characters of the preceding section, differing mainly in the lobes of the calyx enlarging and becoming membranous with conspicuous veins after the fall of the corolla. Herbs or shrubs inhabiting the Canary Islands, the countries bordering the Mediterranean, and South Africa.

5. **Tawny-flowered Sage** (S. aurea), Bot. Mag., 182.—A shrubby species with small entire leaves of variable shape, and large, yellow, ultimately tawny flowers. A native of South Africa, and more curious than beautiful in the tawny or rust colour of its flowers. It was cultivated by Philip Miller in 1731.

6. **Canary Sage** (S. canariensis) Trew Pl. Rar., ii., 19.—A shrubby species sometimes attaining a height of 5 ft. or 6 ft., clothed with a dense white tomentum. Leaves hastately-triangular, stalked; those on the flower-spike lanceolate and coloured. Flowers purple, in large branching panicles. This is a very pretty species, but it is rarely seen in cultivation. A native of the Canaries, introduced in 1698. The calyx enlarges, and becomes membranous in fruit.

III.—Drymosphace.

Calyx tubular or campanulate, with very short lobes; corolla-tube furnished with a ring of hairs inside; upper lip concave, or falcately-compressed, connective, as in the preceding. Herbs with green, usually clammy stems, and large hastate-cordate leaves, and yellow, rarely blue flowers. Natives of Europe and Asia.

7. **Forskohl's Sage** (S. Forskohlii), Bot. Mag. 988.—An herbaceous species, about 18 in. high, more or less clothed with a clammy pubescence. Leaves large ovate, coarsely-toothed, lobed at the base, lower ones stalked, upper one sessile. Flowers violet-blue, in distant whorls of two to six on a branched inflorescence. A hardy species, native of South-eastern Europe and Asia Minor.

IV.—Horminum.

Calyx not enlarging after the fall of the corolla; corolla-tube destitute of a ring of hairs inside; connective bent downwards behind, abruptly flattened, and callous at the end. Herbs inhabiting the Mediterranean region.

8. **Crested Sage** (S. Horminum).—An annual species, of dwarf habit, with small oval-oblong leaves and rather small inconspicuous flowers, but the flower-spikes are terminated by tufts or crests of white, rose, or blue bracts. A very distinct and pretty plant from the South of Europe and Asia Minor.

V.—Æthiopis.

Upper lip of the calyx three-toothed, the intermediate tooth very small; tube of the corolla enlarged under the throat, without a ring of hairs inside; upper lip falcate and compressed; connective deflexed behind and abruptly flattened, callous, and united at the tips. Herbs inhabiting the Mediterranean region and the mountains of Central Asia. The leaves and stems of most of the species clothed with a white wool.

9. **Syrian Sage** (S. indica), Bot. Mag., 395.—A large-leaved herbaceous species, with large flowers in distant bractless whorls of about five or six. The tube of the corolla scarcely exceeds the calyx, whilst the upper arched and concave violet-purple lip is nearly an inch long, and the curved projecting style almost touches the lower lip, which is curiously marked with yellow and dark purple. A hardy plant, cultivated by Miller in 1731; native of the mountains of Syria, but probably not of India.

10. **Sims's Sage** (S. Simsiana), Bot. Reg., 1003; S. bracteata, Bot. Mag., 2320.—A very distinct biennial species in the pair of large long-pointed pink-tinged bracts under each whorl of pale blue and white flowers. It is a tall branching herbaceous perennial, with large ovate wrinkled leaves, the lower ones stalked, the upper sessile, and gradually passing into the bracts. The very long concave upper lip recalls the long curved neck of the giraffe. A native of Russia, introduced in 1820. Mr. Bentham refers this to S. Sclarea (Clary), of which it may be regarded as a superior variety.

11. **Bristly Sage** (S. asperata), Bot. Mag., 4884.—A remarkable plant of the S. Sclarea type, growing about 2 ft. high. It is clothed with glandular hairs, and the calyx is quite rough with bristles. The leaves are ovate-cordate in outline, irregularly toothed, and borne on long stalks, the blade being about 6 in. in length. The flowers, though large, are less showy than in many others, being of a greenish-white. A native of Cashmere; first cultivated in this country by Mr. Isaac Anderson, of Edinburgh, about 1855.

12. **Silvery Sage** (S. argentea), Fl. Cab., 112.—A tall-growing herbaceous species, with large wrinkled irregularly toothed-root leaves, 9 in. or more in length, and a branched inflorescence The white or purple-tinged flowers are arranged in whorles of six to ten, each whorl subtended by large cordate concave sharp-pointed bracts. In its young state the whole plant is clothed with a close white tomentum. It is described as a perfectly hardy biennial inhabiting the Mediterranean region, but it appears to be strictly perennial in our gardens. Introduced in 1768.

VI.—Plethiosphace.

Calyx ovate, upper lip concave, two-furrowed, with three very short teeth; lower lip with two sharp-pointed teeth. Tube of the corolla enlarged below the throat, destitute of a ring of hairs inside. Other characters as in the last section. Herbs inhabiting Europe, Africa, and North Asia, usually with irregularly-toothed leaves.

13. **Austrian Sage** (S. austriaca), Bot. Reg., 1019.—An herbaceous species with naked stems, large, radical, coarsely-toothed and lobed leaves and yellow flowers in bracteate spikes. In colour and shape the corolla resembles that of our native Galeobdolon luteum, except that the terminal lobe of the lower lip is connected with the others by a very narrow isthmus, and the stamens are exserted. A hardy species, native of Austria and Hungary; introduced in 1776. It continues flowering for a long period, and is one of the best of the hardy kinds.

14. **Meadow Sage** (S. pratensis).—Among hardy Sages there are few that surpass this species, which is believed to be truly indigenous in Kent and Oxfordshire. It forms a very ornamental border perennial growing about 2 ft. to 3 ft. high, and producing a profusion of large blue, white, or scarlet flowers. The style projects considerably beyond the arched concave upper lip. This must not be confounded with the much commoner small-flowered S. Verbenaca. In Kew Herbarium there is a specimen of a variety with scarlet flowers.

15. **Two-coloured Sage** (S. dichroa), Bot. Mag., 6004.—This is certainly one of the finest of the Old World species. It is a near ally to S. bicolor (Bot. Mag. 1774), but a much more showy plant, resembling, as Dr. Hooker observes, Collinsia verna in the colouring of its flowers. A glandular hairy plant with stout stems, 2 ft. to 3 ft. high, ovate oblong leaves, the lower ones stalked, and long spikes of large blue, purple, and white flowers. The tube of the corolla is short and wide, and of a reddish purple, and the large lips are nearly equal in size, the upper one and the lateral lobes of the lower of a deep blue, and the centre lobe of the latter is pure white. A hardy species, native of the Greater Atlas; collected by Mr. Maw in 1871.

VII.—Calosphace.

Calyx ovate, tubular or campanulate; upper lip entire or shortly three-toothed; tube of the corolla without any ring of hairs on the inside, but sometimes furnished with two teeth near the base; upper lip straight concave, entire or slightly notched. To this section a large proportion of the most ornamental species belong. They differ widely in habit and inflorescence, but are not easily arranged in subdivisions. Natives of America and the West Indies.

16. **Narrow-leaved Sage** (S. angustifolia), Sweet's Fl. Gard., second series, 219.—A slender, herbaceous plant, 2 ft. to 3 ft. high, with long, very narrow, distantly toothed, sessile leaves, and blue Lobelia-like flowers. In this species the upper lip is very small, and the lower about three-quarters of an inch broad. A Mexican species, introduced into Europe in 1795.

17. **Mealy Sage** (S. farinacea).—The accompanying portrait of this species will be more acceptable than the most complete

description. It is difficult in a genus so rich in ornamental species to say which is the handsomest. One of the principal claims of this species, in addition to its beauty, is its hardiness. The whole plant is covered with a mealy tomentum. It is herbaceous, and in a warm, dry soil, it is nearly or quite hardy, forming large tufts, and throwing up numerous flower-stems about 2 ft. high, covered with flowers all the summer and the greater part of the autumn. A native of the cool parts of Mexico, extending northward into Texas; in cultivation on the Continent as long ago as 1848, from seeds sent by Lindheimer from Texas.

18. **Woolly Sage** (S. leucantha), Bot. Mag. 4318.—A very singular shrubby species with leaves resembling those of Buddleia globosa, and sessile, densely woolly flowers. The calyx is of a violet-purple, and the very short-lipped corolla is pure white; the stamens and style are included within the corolla. A native of Mexico, introduced into this country from the Continent in 1846, by Lady Smirke.

19. **Twin-flowered Sage** (S. oppositiflora).—Very near S. Heerii in having the flowers in pairs, but they are more glutinous, larger with a broader tube and lips, and the stamens are scarcely exserted The leaves, too, are relatively small and oblong, or nearly orbicular, with rounded teeth. A native of Peru, introduced by Messrs. Veitch, through their collector, Mr. Lobb, about 1848. This is not so easily cultivated as some others, being a native of a dry hot climate.

20. **Showy Sage** (S. formosa), Bot. Mag., 376.—A showy scarlet-flowered shrubby species, with broad heart-shaped stalked leaves and leafy flower-spikes. The scarlet corolla is of the same shape as in S. patens, and the long upper lip is strongly bearded. It is recorded to have been very generally cultivated in the gardens around London at the end of the last century, but it has probably long since disappeared from our gardens. It is stated, however, that its flowers are of very short duration, dropping before they decay. A native of Peru, introduced by Thouin in 1783.

21. **Common Scarlet Sage** (S. splendens), Bot. Reg., 687.—This old favourite was introduced from Brazil by Mr. Lee, of Hammersmith, in 1823, and has retained a prominent position in our gardens ever since, in spite of its straggling habit and its very evanescent flowers. The rich colours of the latter, even to the calyx, are surpassed by few plants in cultivation. A variety called Soucheti (Fl. des Serres, 1154) is of more compact habit, with a closer inflorescence, and even more dazzling scarlet flowers.

22. **Violet Sage** (S. ianthina), Fl. des Serres, 884.—This is of the habit of S. splendens, and is closely allied to S. cyanea and amethystina. It has large flowers, in which the calyx and corolla are both of a dark violet shaded with purple, as are also the ample bracts. It was originally described from garden specimens, believed to be of Mexican origin, and was figured in the work quoted, and several other Continental magazines, about 1853-55.

23. **Crowned Sage** (S. involucrata), Bot. Reg., 1205.—A glabrous half-shrubby species, with stout stems, cordate-ovate, toothed leaves, 2 to 3 in. long, with reddish veins, and borne on stalks exceeding half-an-inch in length. The inflorescence is crowned with a tuft of a purplish-rosy-red, green-tipped bracts, and the horizontal flowers are of the same colour; the corolla-tube is nearly 2 in. long, inflated in the middle and smaller at both ends; lips very short-bearded; stamens included. A native of Mexico, introduced by Mr. George Ackermann about 1827. A magnificent species.

24. **Gesnera-flowered Sage** (S. gesneræflora), Lindley and Paxton's Fl. Gard., ii., t. 47.—In botanical characters and general appearance this comes very near to the well-known S. fulgens, differing chiefly in its larger flowers, the upper lip of which is flatter and less shaggy, and the style less feathery. In habit and the duration of the flowers it is said to be superior to S. fulgens. A native of the mountains of New Grenada, introduced by Mr. Purdie about 1850.

25. **Cardinal Sage** (S. fulgens), Sweet's Fl. Gard., second series, 59.—This old favourite is one of the largest-flowered species of the genus. It is easily known by its cordate wrinkled leaves, hoary beneath, and its rich scarlet densely woolly flowers, with a dark purple calyx. A native of Mexico, and from what Sweet says, it appears to have been first cultivated in this country by Messrs. Newman, of Chichester, about 1832; but, under the much better figure (1356) of the Bot. Reg., it is stated to have been introduced into the Horticultural Society's garden by Mr. Graham, in 1829. Dr. Lindley says it was cultivated at Madrid forty years before it found its way into British gardens. In some of the dried specimens the flowers are more than 2½ in. long.

26. **Blunt-leaved Sage** (S. obtusa), Fl. des Serres, 1412.—A distinct little densely branched plant with small oval leaves, about 1 in. long, and deep rosy-red flowers, borne in pairs along the spike; they have a short tube, a small convex, very shaggy upper lip, including the stamens, and a large broad lower lip. A Mexican species, introduced by the brothers Tonel previous to 1860.

27. **Mexican Sage** (S. mexicana).—One of the earliest of the Mexican species cultivated in this country, admirably figured in Dillenius's Hortus Elthamensis (t. 254) under the name of Sclarea mexicana. It is a tall-growing species with ovate, strongly-nerved leaves on very long stalks and dense spikes of large blue flowers. In one variety, collected by Graham, the calyx is very highly coloured.

28. **Graham's Sage** (S. Grahami), Bot. Reg., 1370.—Very near S. obtusa, but in this there is a tendency to colouring in the calyx, and the corolla is of a rich crimson. Mexico; introduced by Graham into the Horticultural Gardens previous to 1830. A very desirable species.

29. **Hartweg's Sage** (S. pulchella).—In appearance this comes between S. fulgens and S. Grahami, having smaller, more numerous flowers than the former, and larger leaves than the latter. The flowers are of an intense crimson, and borne in long crowded spikes. It was raised in the gardens of the Horticultural Society in 1842 from seeds sent home by Hartweg. It is a common plant in the mountains of Mexico and Guatemala, but it seems to have disappeared from our gardens.

30. **Indigo Sage** (S. cyanea).—A shrubby plant, with large ovate leaves 6 in. long by 4½ in. broad, and borne on long stalks. The perfectly blue flowers are arranged in long pyramidal spikes, those of the lower whorls being on larger stalks. The calyx in this species enlarges and persists, and retains its rich blue colour. This plant was cultivated many years ago in the Berlin Botanic Garden, but I have seen only dried specimens. It is doubtless very handsome when grown to perfection. It bore the name of S. cyanifera in German gardens.

31. **Amethyst Sage** (S. amethystina), Smith, &c., ined., 27.—A very pretty plant, though not equal to many of its allies. The leaves are much smaller than in the last, and quite woolly on the under side and stalks, and the flowers are few and distant in the spikes. Mountains of New Grenada.

32. **Heer's Sage** (S. Heeri), Gartenflora, 115.—A half-shrubby species, with large ovate-cordate stalked leaves and slender loose spikes of scarlet flowers. Certainly one of the most desirable of the American half-shrubby species, flowering freely in a conservatory during the winter months. It belongs to the section having long, narrow, tubular corollas, with short lips and protruding stamens; the corolla is erect and clothed with a very fine short down. A native of Peru, introduced into Continental gardens by Warscewicz in 1853.

33. **Camerton's Sage** (S. Camertoni), Gartenflora, 125.—A half-shrubby species, 4 ft. to 8 ft. high, with slender stems and small, oval, rough, hairy leaves, and cinnabar-red flowers. A very pretty plant, belonging to the same group as S. elegans and S. Littæ, having rather long, narrow, tubular flowers, with small lips and stamens scarcely projecting. Supposed to be a native of Mexico, but the history of its introduction is unknown.

34. **Elegant Sage** (S. elegans), Refugium Bot., 228.—A slender-branching half-shrub, with ovate leaves about 2 in. long, on long stalks and deep crimson hairy flowers. The tube of the corolla is long and nearly equal throughout, and the upper lip is much shorter than the lower. A native of Mexico, and one of the most useful plants for a greenhouse in winter and spring, as it flowers very freely in the early part of the year. It was in cultivation in this country in 1820.

35. **Smaller Scarlet Sage** (S. coccinea), Gartenflora, 232.—This ornamental species needs neither description nor recommendation from us, as it is one of the most familiar in the flower gardens of this country. Few plants surpass it in the dazzling brilliancy of its scarlet flowers, which are produced in great profusion until late in the autumn. It is a native of America, having a wide range of distribution, and it was first introduced into this country in 1774. This species has become naturalised in several warm countries.

36. **Bolivian Sage** (S. rubescens), Bot. Mag. 5947; S. boliviana, Flore des Serres, 1148.—A tall shrubby plant more or less clothed with a pale hoary pubescence, ovate-cordate leaves 4 in. to 10 in. long, and a pyramidal panicle, a foot long or more, of scarlet and violet flowers. The calyx is violet, and clothed with glandular hairs, and the corolla a rich crimson or scarlet; tube of the latter long, cylindrical, and curved, and the upper lip less than half as long and broad as the lower one. A native of the Andes of New Grenada, introduced by Warscewicz about 1855.

37. **White and Blue Sage** (S. albo-cœrulea), Flore des Serres, 1340.—A very striking and a very beautiful species, easily distin-

guished from all others by the colouring of its large flowers. The corollas exceed an inch and a half in length, and the tube and upper lip are of a yellowish-white, whilst the broad lower lip is of a rich blue tinged with violet or purple. It forms large tufts in the open air in summer, with stems about a yard high, the upper half clustered with flowers. The leaves are lanceolate and about 6 in. long. Van Houtte describes it as retaining its beauty for a long period. A native of Mexico, introduced by Ghiesbreght.

38. Bearded Blue Sage (S. patens), Bot. Mag., 3808.—This magnificent species of Sage cannot be replaced by any other plant in the flower garden. The deep ultramarine blue of its flowers is scarcely known in any other genus of summer-flowering plants suitable for the open air. Although rather straggling in habit, and its flowers of short duration, it is indispensable. Indeed, it is so universally grown that a description of it would be quite superfluous. It is a native of Mexico, and was introduced through the agency of Mr. Parkinson, Her Majesty's Consul in that country, in 1837. After its introduction it spread rapidly and widely in the gardens of this country, and it was figured in nearly all of the magazines of the day. There is a grand quarto plate of it in the second volume of the second series of the "Transactions of the Horticultural Society." Several varieties of this species are known; one of the most noteworthy is the S. patens flore-albo, figured in the "Flore des Serres," 503. This differs in no respect from the type, except in having white flowers.

39. Roezl's Sage (S. Roezli), Fl. des Serres, 1407.—A glabrous (except the flowers) half-shrubby species, with ovate-stalked leaves 3 in. to 4 in. long, and crimson flowers about 2½ in. long. Calyx large, tinged with red upwards; lips of the corolla long, divergent; stamens included. Evidently a very handsome species, but I have only seen the figure quoted. Mexico, Roezl.

40. Long-styled Sage (S. longistyla).—This species was in cultivation in this country in 1831. It is remarkable for its very long slender flowers, and much longer style, often projecting an inch beyond the corolla, which is about 1½ in. long. The stamens also project considerably; flowers crimson; leaves large, cordate, on long stalks. Mexico.

41. Lofty Sage (S. excelsa).—A tall-growing herbaceous plant, with nearly glabrous oval-toothed leaves, with a long tapering point and slender spikes of red flowers arranged in pairs. It was raised in the Horticultural Society's Gardens from seed received from Mexico about 1840.

42. Three-coloured Sage (S. tricolor), Fl. des Serres, 1237. —A dwarf-branching tufted under-shrub, with slender hairy branches, small ovate leaves about 1 in. to 1½ in. long and rather loose flower-spikes, with the flowers in pairs. The flowers are very striking and distinct in their colouring, the tube of the corolla being white, the short, erect, upper lip hairy and tipped violet-carmine, and the lower broad lip vermilion-red in the upper half. A native of Mexico, and a very ornamental species for the greenhouse. It was sent by the Brothers Tonel to Mr. Verschaffelt before 1857.

43. Shining Sage (S. rutilans), Rev. Hort., 1873, p. 251.—A branching, half-shrubby, glandular, hairy plant, 2 ft. to 3 ft. high, with ovate-lanceolate dark green leaves and very numerous scarlet flowers; the latter are stalkless and nearly erect, with the erect upper lip of the corolla very short and the stamens projecting about half-an-inch beyond it. This is described as an exceedingly profuse bloomer, and as being especially valuable on account of its producing its flowers in late autumn and early winter. Its origin is not known with certainty, but most likely it is Mexican.

44. Cacalia-leaved Sage (S. cacaliæfolia), Bot. Mag., 5274.—This is an exceedingly beautiful species, allied to the more familiar and handsome S. patens, but differing materially in the shape and colouring of the corolla, and other particulars. It has large triangular or hastate-cordate leaves, broad corollas, with an abrupt curve upwards near the base of the tube, and nearly equal lips, and the stamens and style project more than half-an-inch beyond the upper lip. The blue flowers are very showy, but they are not of the intense hue of S. patens, and towards the base they are tinged with purple. A native of Chiapas, in Central America, where it grows in the Pine forests of the mountains, and is therefore nearly hardy in this country. It was imported into Europe by Mr. J. Linden previous to 1861.

VIII.—Echinosphace.

Floral leaves and bracts prickly; calyx ovate; upper lip three-toothed, lower one shorter, bifid, all of the lobes prickly pointed; corolla with a ring of hairs inside; lobes of both lips fringed. Only the one species described below.

45. Thistle Sage (S. carduacea), Bot. Mag. 4874.—One of the most distinct and elegant of the genus, closely resembling Morina persica in its leaves, bracts, and general appearance, and not unlike some of the Thistles. But the most striking character is offered by the deeply-fringed lilac-purple flowers, with yellow anthers. It is herbaceous, growing about 2 ft. high, and the prickly-toothed, oblong, white, woolly leaves all proceed from the root; and the flowers are subtended by whorls of longer prickly bracts. A native of California, introduced by Messrs. Veitch, through Mr. Lobb, about 1854. It is stated in the Bot. Mag. that this species has proved hardy in the open ground.

IX.—Heterosphace.

Floral leaves deciduous, calyx tubular, the upper lip truncate, three-toothed. Tube of the corolla furnished with a ring of hairs inside or rarely naked; upper lip short, erect, the lower with very small, somewhat spreading, lateral lobes. Herbs, natives of the Mediterranean region, Africa, Asia, Australia, and North America.

46. Lyre-leaved Sage (S. lyrata).—This species is remarkable in having tufted root-leaves, like those of the Dandelion, more or less deeply lobed in different individuals, and usually of purple colour on the under surface. The flowers are of a purplish-violet. A native of North America, cultivated in the early part of the last century in this country. There is a figure of it in the "Hortus Elthamensis," but not in any of the more recent works.

47. Decaisne's Sage (S. porphyrantha), Rev. Hort., 1854, pl. 16; Bot. Mag., 4939.—A pretty species of erect or decumbent habit, with cordate-orbicular crenate, rather thick leaves, less than an inch across, on petioles of about the same length, and rich crimson flowers in clusters of four to six along the spikes. The upper lip of the corolla is about equal in size to one of the lobes of the nearly equally three-lobed lower lip. It is of Mexican origin, and has since been identified with specimens collected by the officers of the Mexican Boundary Survey, and by Wright in Texas. In cultivation on the Continent in 1854, and in England in 1856. A very free-flowering species in the open borders in summer. This is in gardens under the name of Rœmeriana, which is a distinct species noted below among those not yet introduced.

The following are a few species not yet in cultivation, but which merit the attention of collectors.

Eusphace.

48. Aucher's Sage (S. Aucheri).—A native of Asia Minor, resembling the Common Sage in its foliage, with branching bractless panicles of large flowers borne on a slender naked stem. It comes near S. candelabrum.

49. Algerian Sage (S. Balansæ).—A very distinct half-shrubby species, about 2 ft. high, with long narrow leaves (recalling those of some species of Lavender) and narrow spikes of large blue flowers. A native of Algeria, growing on a chalky soil.

50. Jamin's Sage (S. Jaminiana).—An elegant plant, about a foot high, with leaves bipinnately divided into narrow segments, and remarkably large woolly calyxes. A native of Algeria.

Drymosphace.

51. China Sage (S. miltiorrhiza).—A very showy species with more or less hairy pinnate leaves and large widely-gaping blue flowers. It is a native of North China, and doubtless quite hardy in this country.

Calosphace.

52. Woolly-leaved Sage (S. leucocephala).—A shrubby species, usually about 3 ft. high, but sometimes attaining a height of 9 ft. It has thick cordate leaves covered on the under surface with a dense white or rusty felt, and very dense spikes of large reddish-purple flowers; the calyx, which is clothed with a white down, is nearly or quite an inch long, and the nearly straight corolla projects about 1½ in. beyond it. A native of the Andes of Peru, and, judging from dried specimens, an exceedingly handsome plant.

53. Woolly-flowered Sage (S. tomentella).—A Brazilian shrubby species, about 3 ft. high, with large white woolly flowers.

54. Rough-leaved Sage (S. scabrida).—From the same country as the last, remarkable for its hard ovate-lanceolate very regularly crenated leaves and scarlet woolly flowers nearly 2 in. in length. In both of these species the lower lip is much shorter than the upper, and protrudes considerably.

55. Golden Sage (S. chrysantha).—A shrubby species, with rather small flowers, the calyx covered with a golden-yellow tomentum, and only the lips of the purple or scarlet corolla projecting beyond the calyx-tube. A native of Mexico.

56. **Bentham's Sage** (S. Benthamiana), Field, Sert. 19.—Mr. Gardner, who discovered this species in the Oregon Mountains of Brazil at an elevation of nearly 5000 ft., describes it as a very beautiful shrub, about 4 ft. high, growing in a dry rocky place. It is apparently of compact habit, with small close foliage and scarlet, velvety flowers.

57. **Sesse's Sage** (S. Sessei).—A shrub with large ovate leaves on long stalks and brilliant scarlet flowers, singular in the large inflated persistent crimson calyx. An exceedingly handsome Mexican species.

58. **Regla Sage** (S. Regla).—Similar to the last in the calyx, but it is of more compact habit, with small leaves less than an inch long. Mexico. According to Sweet this was formerly in cultivation.

59. **Long-leaved Sage** (S. recurva).—A vigorous species, with large membranous ovate leaves 6 in. or more long, on stalks of nearly equal length, and large violet-purple flowers, the calyx being of even a deeper hue than the corolla. Mexico.

60. **Downy-leafed Sage** (S. vestita).—A shrubby species with cordate leaves clothed all over with a soft down and scarlet flowers 3. in. in length. A native of New Grenada, and one of the finest species of the genus.

61. **Long-flowered Sage** (S. longiflora).—This must be a truly gorgeous shrub. It grows from 4 ft. to 6 ft. high, and bears terminal pendulous spikes of scarlet flowers 4 in. to 5 in. long; the corolla is velvety, and the persistent glabrous calyx is nearly 2 in. long, changing to a rich purple. It is surprising that this fine species, which grows wild in Peru and New Grenada, and is cultivated in the gardens of those countries, has not been introduced, as it surpasses everything we have belonging to the genus in this country. The hairy leaves are ovate-cordate, tapering into a long point about 4 in. to 5 in. long, and borne on long stalks. The flowers of some of the dried specimens are fully 5 in. long, and the flower-spikes appear to hang down after the manner of Thyrsacanthus rutilans.

62. **Quito Sage** (S. quitensis).—A very showy shrubby species with large, crimson, velvety flowers, remarkable for the broad short calyx and the ovate-lanceolate leaves, 2 in. to 3 in. long. Found in the Andes of Quito, at an elevation of from 12,000 to 13,000 ft.

63. **Purple Sage** (S. purpurea).—A neat perennial, very common in many parts of Mexico and Guatemala. The flowers are not very large, but they are very numerous and pretty.

Heterosphace.

64. **Rœmer's Sage** (S. Rœmeriana).—This is apparently an annual species, with stout hairy stems, and the leaves (5 in. to 6 in. long), are curiously divided into stalked and sessile leaflets, somewhat the shape of the leaves of S. porphyrantha, which sometimes bears this name in gardens. The flowers, too, are very similar to those of the latter species, and it is a native of the same region.

Pycnosphace.

65. **Scabious-leaved Sage** (S. Columbaria).—This species belongs to a small section differing chiefly from S. carduacea in the leaves, bracts, and calyx-lobes not being prickly. It is a singular little plant presenting the appearance of a Scabious rather than a Salvia. A native of California.

List of the species enumerated, with reference to their numbers. Those names in *italics* are synonyms.

albo-cœrulea	37
amethystina	31
angustifolia	16
argentea	12
asperata	11
Aucheri	48
aurea	5
austriaca	13
Balansæ	49
Benthamiana	56
bicolor	15
boliviana	36
bracteata	10
cacaliæfolia	44
Camertoni	33
candelabrum	1
canariensis	6
carduacea	45
chrysantha	55
coccinea	35
Columbaria	65
cyanea	30
cyanifera	30
dichroa	15
elegans	34
excelsa	41
farinacea	17
formosa	20
Forskohlii	7
fulgens	25
gesneræflora	24
Grahami	28
Habliziana	4
Heerii	32
Horminum	8
ianthina	22
indica	9
interrupta	2
involucrata	23
Jaminiana	50
leucantha	18
leucocephala	52
longiflora	61
longistyla	40
lyrata	46
mexicana	27
miltiorrhiza	51
obtusa	26
oppositiflora	19
patens	38
porphyrantha	47
pratensis	14
pulchella	29
purpurea	63
quitensis	62
recurva	59
Regla	58
Rœmeriana	64
Rœmeriana	47
Roezlii	39
rubescens	36
rutilans	43
scabiosæfolia	4
scabrida	54
Sessei	57
Simsiana	10
splendens	21
taraxacifolia	3
tomentella	53
tricolor	42
vestita	60

W. B. Hemsley.

TREES AND SHRUBS.

ROOT-CARE IN TRANSPLANTING.

To carry on the work of transplanting trees and shrubs with some prospect of success, especially those subjects which have been introduced from more genial climates than our own, it is of the first importance that every care be taken to disinter and preserve the roots: however favourable an appearance a tree may have at the top, if the roots be mutilated by careless or unskilful lifting, it is not even half a tree, and will have a long struggle for bare life. To lift trees well the characters of the roots of the various kinds must be studied—their texture and mode of growth. The various aspects of the foliage and branches of trees and shrubs are familiar to all who take any interest in their culture, but I may venture to affirm that but comparatively few are equally familiar with the aspects and peculiarities of their roots. This experience could not be acquired, I grant, except by those who have been much engaged in transplanting; but it is of much greater value to the planter, so far as success is concerned than any other kind of knowledge. There is a proper way to prepare a site for a tree, and a proper way to plant it: also a proper way to fasten and protect it when planted. If I were to be held responsible for the success of a piece of planting, I should be very careful to see that the lifting of the trees was well performed; for this kind of work the best hands should be employed. I have no hesitation in saying that bad lifting is at the bottom of three-fourths of the failures after planting. It might be stated as an axiom in the lifting of trees, that if the roots be well secured the labour of moving an unwieldy ball of soil may be entirely dispensed with. In practice it will be found, except in comparatively few instances, that to move a tree with a very large ball of soil is a great mistake, as the unwieldy mass of earth attached to the roots dislocates and distresses them; but a small ball of soil, by way of ballasting the top with the roots, will ensure a far greater probability of success in the future growth of the tree after transplantation; in fact, a small covering of earth round the roots of a tree, whilst being moved, is undoubtedly preferable to no ball, and vastly superior to a large ball of soil that can only be moved with great difficulty.

Among the many different trees and shrubs, the possibility of lifting them with balls of soil, or even securing their roots, varies much with different individual species, for out of the same description of soil some species will move easily with good balls, while it will be almost impracticable with others. This arises simply from the mode of growth the various roots assume; some ramify in all directions, like the Rhododendron or Holly; others take a horizontal course, as some Conifers. On lifting with a particular aim in view to secure the roots, there is one rule which applies to all sorts, whether small or large, and that is to begin by inserting the spade at a sufficiently wide radius from the stem of the tree or shrub, to work round in a circle, and at once to go down sufficiently deep to be below the roots before approaching nearer to the tree. I have just seen a consignment of ornamental trees, excellent so far as the appearance of the tops go, but utterly spoiled from the manner in which they have been lifted, the roots being cut so short off by the spade, that only snags are left to the trees, the really vital roots being left behind. The first cost of lifting should not be considered when it is a question of life and death with the plants. I have found, from considerable experience in lifting shrubs and trees of all sizes, that to get well below the roots in the first instance, and gradually approach the tree is the simplest and easiest way of securing the roots and reducing the bulk of soil so as to make a ball manageable.

The digging-fork is an indispensable tool in tree-lifting, so is a long-handled, very light pick, with long slightly-curving tines for undermining; another exceedingly useful implement in transplanting medium-sized plants is a flat hand-barrow without feet, 24 in. square in the bed, with the four handles rising up with a considerable swan-neck-like crook, so that it can be lowered into a hole and slipped underneath the plant when ready for removal. In addition there should be a low truck on two broad wheels not more than 18 in. high, with one long and strong central handle sufficient to bear the strain of a ton weight. With a machine of this simple description I have moved to long distances many large trees with corresponding balls of earth. A very common practice in moving large shrubs and trees is to make use of the tops as a lever to move the mass, and to drag the plants about by the roots; this is a great mistake, and should be avoided. Some species are particularly weak at the collar, the roots not becoming strong at the junction with the stem for many years; for instance, all the varieties of Cupressus Lawsoniana have an abundance of cord-like tough roots, but not strong enough to buttress the plant; Cupressus nutkaensis, White and Red Cedars, Picea Pinsapo and P. nobilis, are, as a rule, weak at the neck; with all such plants the lifting should be by the ball alone, for which purpose I use an iron implement, in shape something like a gridiron with a long handle, which is easily slipped underneath the mass to be lifted, and the whole can be easily moved by its means on to the truck or the ground without materially distressing the plant. Some trees and shrubs will, however, bear to be handled with impunity by the stem, if the tops be well buttressed by strong roots. Taxodium distichum and Horse Chestnuts are of this description, also the majority of Hollies, Portugal Laurels, Yews, Thujas, and some Conifers, as the genus Pinus generally. Some, again, are possessed of such an intimate unity of root and top that a very small amount of care is only necessary to secure a good bunch of roots; of this description are all the various sorts of Box, Lilacs, Spiræas, notably the Sweet Bay, American plants generally—as Kalmias, Heaths, Rhododendrons, Gaultherias, Pernettyas, Azaleas; of these last it must be said that to secure roots in abundance large balls are absolutely necessary; an irreparable injury would accrue to the plants if the soil were shaken away from their roots, on account of their fineness, as they pervade the soil like the mycelium of a Fungus, so that if the soil be removed, the roots must be removed with it. There is another class of plants which, from the nature of the roots, it is always difficult to move with balls of soil, or even secure the roots themselves satisfactorily, the roots being long and thread-like, and not sufficiently grasping the soil—Berberis Darwinii and Mahonia Aquifolium are examples. Evergreen Oaks, Double Furze, and Arbutus require special care, and should be moved in very early autumn or in summer. Indeed, in the case of all plants of which there is a certainty that they will be transplanted in winter, it is advisable simply to move them in autumn, even on to December it will not be too late, and allow them to remain in position if they are intended to be transplanted in March. The plant which has been lifted out of the ground in November, and simply replaced in the same position, will be found in winter to be bristling with young fresh-feeding roots when transplanted in February or March, while, if not moved until the time of transplanting, no young roots will be forming, and the plant will be in the worst possible condition to withstand the shock, and the effects of cold dry winds.

There are yet other plants which, by the nature of their roots, require special care in the removal—plants with soft fleshy roots, which are easily broken, and do not hold the soil well together, though of very rambling habit. The Catalpa is a familiar instance, also, the Tulip tree, Aucuba, Magnolias, Althæas, Forsythias, but, fortunately being all very soft-wooded, they are not easily killed; when a ball is secured, and a plant of this description has to be moved some distance, it will be necessary to wrap it round with a piece of matting or cord to keep it from falling to pieces. I have found a square piece of strong sail-cloth a simple and very efficient means of lifting and carrying about soft-rooted shrubs; the four corners of the cloth are easily gathered up and fastened; and they also present to the operators a means of getting a good lifting grip; in fact, in many instance, it is preferred to the hand-barrow mentioned above. These remarks apply to plants of all sizes, but more especially to subjects arrived at specimen sizes, where the object is to maintain the plant intact without any reduction or mutilation whatever; under these circumstances the vital importance of taking every care of the roots, and studying the peculiarities of the plant will be apparent.

W. D. C.

TEA PLANTS.

It seems somewhat strange, considering the great interest attached to the Tea plant, that it should be so seldom seen in our conservatory borders or beds; for, apart from the uses to which its leaves are put, its glossy foliage, sturdy habit, and pretty white flowers with yellow stamens ought to ensure more attention than it at present receives. The first introduction of the Tea plant into our conservatories and greenhouses dates back to the time of Linnæus, who seems to have been the first person in Europe who possessed a living Tea plant. When well grown it forms a bushy shrub, sometimes reaching to the height of nearly 10 ft. In general appearance it reminds one of a Camellia, of which it is a near relation. There seems to be at least two species of the Tea plant, viz., Thea viridis and Thea Bohea (figs. 1 and 2). Some authorities, however, look on them as mere varieties of the same plant. Without entering into a discussion on this subject, we may safely affirm that Thea viridis is a much more hardy plant than its congener. Its leaves are longer and their edges more distinctly turned back. The time of its flowering, too, is a full month before that of Thea Bohea. In addition to these there is also the Assam Tea plant (Thea assamica), a robust-growing handsome species. The cultivation of the Tea plant is not very difficult, and differs but little from that of the Camellia. It may be propagated by seeds, which ought to be sown immediately after they arrive at maturity, or by cuttings, or layers in heat. It may also be grafted on the Camellia. The Tea plant, according to a writer in the "Revue Horticole," generally flowers in September.

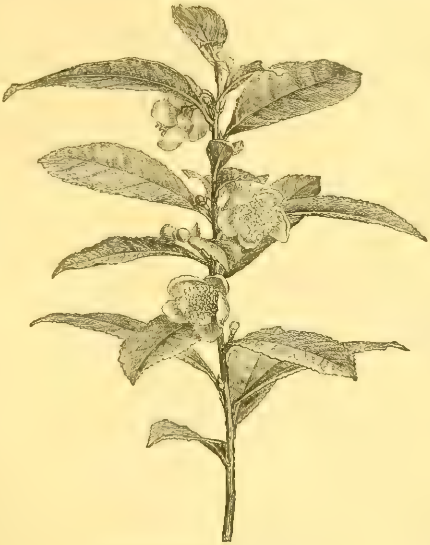


Fig. 1.—The Green Tea Plant (Thea viridis).

STREET TREES.

It is not possible to devise any greater improvement in the appearance of roads or streets in large towns, also for the comfort of foot passengers in hot weather, than would be afforded by rows of trees planted avenue-like on each side; by way of a practical illustration, a proposal to decorate Camden Road (which is 1½ miles in length), was recently adopted by the St. Pancras Vestry, and was referred to in The Garden (see p. 376). There has for some time been an evident awakening to the fact that throughout the kingdom generally we are far behind other countries in the appearance of our large towns in the way of tree decoration in the principal provinces. London in this as in many other things will be keenly watched by provincial towns for an example of what should and can be done; and it is hoped that the first endeavours to create a gigantic boulevard in the metropolis will be crowned with that unequivocal success that such a nobly planned enterprise demands at the hands of those who have undertaken it. The question may be asked, Have the recent attempts at tree planting in London, such as the Thames Embankment and the new thoroughfare from Charing Cross to the

Embankment, been of such a character as to give a reasonable prospect of the trees continuing to grow to a size that will make them effective in either appearance or the ability to give the desired shade? I say decidedly not, and that their failure before they attain anything like such proportion is as certain as if it had been already accomplished. In the management of town trees there are many serious obstacles with which to contend, one in particular of the most vital nature being an insufficient supply of water to the roots. The merest tyro in the study and cultivation of the vegetable kingdom need not be told that if a tree or plant of any description be placed under conditions where it cannot receive enough moisture for the roots, there is an impossibility of maintaining it in a healthy thriving condition, and if when its roots extend they get in a position that affords an insufficiency of moisture still further aggravated by the increased extent of branch and leaf surface, the impossibility of a healthy existence becomes evident. This is just the condition under which the trees on the Embankment are placed. During the past winter I saw in different places the flags which compose the foot-way taken up, and the material under them was as dry as if it had lain in a covered building for years, and this, be it remembered, after an exceptionally wet summer and autumn. Now if the roots of these unfortunate trees enter this dry ungenial mass, they cannot possibly support the healthy and vigorous growth of the trees, and if they remain confined within the small grating-covered spaces, how long can the trees be kept in a growing state, even with every assistance that can be given them? And if this were possible, as the heads got larger, they would be certain to be blown down by high winds, from the fact of the roots having no hold of the soil for a sufficient distance from the bole to withstand the strain upon them, even if assisted by supports of ten times the strength of the objectionable props that now surround them. If trees in such a position are ever to attain their natural size, the material for a considerable depth under the whole of the flags which compose the foot-way must be of a description to afford the necessary sustenance, and above all, there must exist the means to keep the soil in which they are growing sufficiently wet. In this there is nothing impossible. In all cases the foot-way slopes slightly towards the centre of the street; this, instead of consisting of an unbroken surface of closely-jointed flags, should be traversed from end to end, at equal distances apart, by continuous lines of narrow grids, say 6 in. or 8 in. wide, that would allow the rainwater, as it runs towards the channel, to pass down into the earth below the flags, just in the way that grids are placed across a steep garden walk to convey the water into the drains. The perforations in these grids necessary to admit the water would be so small as not to make them in the slightest degree unpleasant to walk upon, and the surface could easily be so roughed as to prevent their being at all slippery—all that would be required would be for them to be made to fit into the flags, and not to rest on the surface of the earth, which should be lower than their underside; otherwise they would soon get clogged; they should also be of easy removal so that the surface of the earth under them could be loosened as occasion required to admit of the water percolating through it. Manurial stimulants so far as required could by this means be easily applied and so washed into the soil. It may be said that all this would cost money—no doubt it would, but nothing serious in addition to that which it has already been deemed necessary to expend entirely without good results. In planting trees in towns, there can be no greater mistake than the use of half measures, as they simply result in failure, disappointment, and waste of money. We see innumerable instances of the power in vegetable life to succeed fairly under some adverse influence of soil or situation, but in the case of trees planted in the street, they exist under such a combination of adverse conditions of soil, atmosphere, and everything essential to their well-being, that unless everything possible be done for them, it would be better never to make the attempt. There is one thing in particular to be observed, viz., that where gas pipes are necessarily placed in the soil near where the roots will come, it is useless to plant. No one can fail to be convinced of this who has ever noticed the state of the earth for several feet adjoining pipes that have been laid for any length of time, permeated as it is with noxious gases until it is as impossible for the roots of any plant to exist in it as it would be in pure coal tar itself. A word as to the kind of trees to be selected for town planting, especially for London: variety would no doubt be desirable, if it were possible to select different kinds that would thrive equally well, but it is not. Of this the trees that have been planted in numbers of places in the metropolis during the last twelve or fifteen years afford the clearest proof. All that have been tried besides the Plane have made such indifferent progress that its superiority has been unquestionably established, a position which it holds when in a much older state. Those who are willing to sacrifice an even, uniform growth to variety may choose different kinds; against that I have nothing to urge; in fact, I quite coincide with the idea, so far as the squares, parks, and private suburban gardens are concerned, but for the streets, where there is such an accumulation of difficulties with which to contend, I maintain that to give preference to variety in the place of uniform vigour and lasting properties is a serious mistake. If there be another tree I should be disposed to recommend, it would be the Ailantus glandulosa. This, like most other Chinese plants, will thrive on very coarse food; its leaves are also insect-proof, and it retains them in a green healthy condition until late in the autumn, which is of great importance. Elms and Limes, especially the latter, are always a prey to red spider when they exist under conditions averse to robust vigorous growth, so much so that they are often leafless by the end of July—a state in which they have by no means an inviting appearance.

T. BAINES.

Propagation of Xanthoceras sorbifolia.—M. Decaisne suggests that this might be grafted on Kölreuteria paniculata, a tree to which it is nearly related, and it might also be well to try it on some of the slender-growing Pavias. It has occurred to me that if cuttings of it do not strike readily, shoots might be grafted early in the spring, before the buds burst on bits of its own root, as is done in the case of the Clematis, and if roots of the Kölreuteria or Pavia would answer utilised in this way, so much the better. Imported seeds might possibly be secured, and if at all like those of its allies, the Pavias, they would germinate readily. Another plant belonging to this group, but rather uncommon in gardens, is Greyia Sutherlandi, a small specimen of which bore a panicle of bright red flowers in the Chelsea Botanic Garden a year or two ago. This plant is very beautiful, but rarely blooms on its own roots unless starved for the purpose; hence it might be desirable to graft this plant also on roots or stems of either Kölreuteria or Pavia, in order to induce it to bloom more regularly than it seems inclined to do.—B.

Transplanting Deodars and Hollies in May.—Now, when Deodars are in the flush of young growth, is the best and safest of all periods in the year for transplanting them. The sap is in motion, the roots are active, and if the work be at all carefully and skilfully performed, success is now certain. The same rule applies to Hollies, and probably to most, if not all, our evergreens. The inexperienced may be reminded (says the "Florist") that, in the case of all choice specimen trees, there should be no cramping of the roots. The pit prepared for them should be wide enough to take their full spread; it should be broken up deeply and thoroughly, new soil being worked in if requisite. The surface, before receiving the tree, should form a flat cone, the apex of which should bring the neck of the tree a little, or in some soils—moist ones—more than a little, above the surrounding surface. Every separate root should be separately embedded at its full length in the earth. In dry soils and dry seasons the roots, when slightly covered, may be well soaked with water, leaving the finishing-off for twenty-four hours, till the flush of water has soaked away. Support against wind is necessary, for the same reason that the barbarous practice of lifting and shaking the tree, "to settle the earth about its roots," should never be resorted to. Both these processes tend to draw the roots from the position in which they are or should be laid out, and necessarily bends or cramps them at some point or other, since they are not, like wires, capable of forcing their way through the earth back to the original position from which they were moved by either the lifting or the wind-waving.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

An Ancient Oak.—In the middle of a pasture field near to and belonging to the Spitula, about a mile from Hexham, stands a remarkable and venerable old Oak tree, a giant of unnumbered winters. Its trunk is only 3 ft. high, and it then branches off into three main stems still fresh and vigorous. The circumference of the trunk at 3 ft. from the ground, just beneath where the leaders branch off, is 23 ft. 4 in.—G. F.

Old Elms in Ringmer Churchyard.—It has at length been found necessary, says the "Builder," to top the ancient Elms at Ringmer Church, Sussex, in consequence of the decay of the old trunks, which are 26 ft. in circumference, and quite hollow, rendering the position of the large limbs above insecure. An entry in the parish register shows that these venerable trees were planted in 1607, and are thus 269 years old.

Dwarf Arbor-vitæ Edgings.—Those who do not like Box, or are in climates too cold for it, should by all means use the Globe Arbor-vitæ. It can be laid just as Box is laid, and bears trimming just the same as Box, if not better. We ("Gardeners' Monthly") recently saw some beautiful edgings of it at a nursery in West Chester.

The Sour Wood or Sorrel Tree (Oxydendrum).—This is common in the rich woods from Pennsylvania and Ohio south-west. It flowers in June and July, and is said to produce the finest honey. It is said to excel Basswood and White Clover in that respect, the honey having a richer flavour.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Vineries.—Where Vines were started with fire-heat some time back, they will have finished blooming, and as soon as the berries are the size of small Peas, they should be thinned. This operation frequently appears to be one of some difficulty to amateurs. If the aid of an experienced Grape grower near at hand could be procured, I should advise any amateur who is intending to make his first essay at Grape thinning to get his assistance, as a practical illustration of the extent to which the berries should be thinned is much more easily imparted in that way than by the most carefully written directions. Such assistance not always being available, I will try to describe the operation as intelligibly as possible in writing, starting with a few words as to the thinning of the bunches. There is no cultivated plant in existence, if fairly treated, that will fruit more freely than the Vine, the result of which is that more than half the Vines in the country are ruined before they have grown to a sufficient size to fill their allotted space. Fruit trees in the open air that are subject to the vicissitudes of the weather (which in adverse seasons often destroys their blossoms entirely, thereby preventing the trees forming and maturing fruit for that year) often beget an inclination to over-crop in seasons when an abundance of fruit sets; but under glass, with fair treatment, there is every probability of the vines producing annually as much fruit as they can sustain. There is not a more general error in Grape growing committed by beginners than to allow the Vines to be overloaded with fruit, the effect of which process is to injure them permanently. Many amateurs, through an impatience to obtain fruit, allow those Vines that have been planted one year to bear such a crop that so far taxes their energies that the requisite wood-thickening for the year does not take place to any appreciable extent, and a hard stunted condition that never afterwards permits of free growth is the result, the only remedy for which is to bring up a young cane from the bottom, and very frequently replanting altogether is necessitated. A couple of moderate-sized bunches of Grapes is quite a sufficient crop; in fact, if Vines be not allowed to grow any fruit for the first year, they will be much the better for it afterwards, and will go on satisfactorily for a lifetime. It must not be supposed from this that it is only in the early stages of a Vine's existence that over-cropping is a mistake, but it is then more injurious in its effects; yet it is quite possible to reduce even the most vigorous Vine that has already covered all its allotted space to such a state of weakness by repeated excessive cropping as to make it incapable of producing Grapes worth the name. Amateurs will do well to bear in mind that permanent injury is not the only result of over-cropping, but the quality of the fruit for the time being never approaches that produced by Vines that are not overloaded. The question often asked is, What weight of fruit will a strong, established Vine bear? Supposing that the roots are in good condition, with plenty of room to extend in suitable soil, either natural or in the shape of a prepared border, the bearing capabilities will, in a great measure, depend upon the extent of the space that can be spared for the Vine, when, as is most usually the case, each Vine is confined to a single ordinary rafter, say 18 or 20 ft. in length, from 20 lbs. to 25 lbs. (the number of bunches is immaterial) may be looked upon as sufficient, and this weight good, established, well-managed Vines will continue to produce for many years without failure. If the highest point of colour be desired with large hammered berries, such as are seen in the best exhibition examples, a reduction of one-fourth the above weight will, in all but the most exceptionally strong Vines, be necessary. Where Vines are allowed to make two or three canes each with enough room to prevent crowding the shoots, their root-power will be proportionately greater, and they will mature a considerably larger quantity of fruit than a single rod. In thinning the berries enough should be cut out to allow all that are left to swell to their full size without compressing each other, yet so that when the bunch is ripe it will keep its shape when laid on a dish without any portion falling loosely over in the way that always occurs when the bunches, as too often seen, are over-thinned. To remedy this the shoulders of the bunches should be left much fuller of berries than the middle and extremities, as the upper portion can rise as the berries swell in a way that those lower down cannot. Cut out the berries well from the insides of the bunches all round the principal stalk. Avoid as much as possible touching with the scissors, and not at all with the fingers, any of the berries that are intended to remain; for the bloom that adds so much to their appearance when ripe is upon them from the first, and if a speck the size of a pin's head be removed when the Grapes are small, it will be the eighth of an inch in diameter when the berry has attained its full size. From this it will be obvious that the earlier the thinning operation is completed after the berries attain the size of half-grown Peas, the better chance there is of cutting out all that have to be removed without touching those that are to remain. It may be said that Grapes devoid of their bloom are just as good to eat as when it is perfect, but the beauty of their appearance is sacrificed. I have frequently seen amateurs, who have taken to Grape growing for the pleasure they derived from the cultivation of this the finest of all fruits, persevere in it until they had reason to be proud of the result which they obtained, their Grapes being able to bear favourable comparison with examples generally seen on the exhibition table. Never, except in the case of bunches much above the usual size, tie up the shoulders of the bunches in the way sometimes seen, as where this is practised the bunch, when cut, will not hold together, the shoulders that have been so looped up always remaining loose and having an unsightly appearance when cut. The practice of thus tying-out the shoulders is from an idea that it enables the berries to swell better, which is simply a mistake, as, except in the case of very large bunches, the shoulders will gradually rise as the berries below them grow. Keep the shoots regularly stopped in allowing as many leaves as there is space for exposure to the full light, but not so as to crowd over each other, or they can never acquire the strength and substance essential to their requisite assistance to the roots. Give top air early in the morning—when there is an appearance of a bright day a little should be admitted before eight o'clock; if the sun be allowed to get in force upon the glass before the lights are opened so as to dry the leaves from the moisture that accumulates upon them during the night, they are liable to scorch; give more as the heat increases later in the day. If any air be admitted at the front lights during the early stages of the crop it must be so far limited as not to cause a draught, or it will produce rust on the berries. Water the floor of the house several times during the day in bright weather, and especially at the time of closing, which should be early enough in the afternoon, to cause the heat to rise to 90° or 95°, with the sun upon the glass; when the weather is cloudy, shut up sooner. The necessity for this early closing cannot be too much impressed upon beginners in Grape growing; there is nothing of greater importance alike to the development of the present season's crop and maturing the wood for another year. Where there is an inside border occupied by any portion of the roots, see that these receive plenty of water—here liquid manure can be applied with advantage. It never should be forgotten that there are very few cultivated plants that require so much sustenance as the Vine; the immense amount of growth a healthy Vine will make during the summer requires a quantity of support; and, although volumes have been written upon

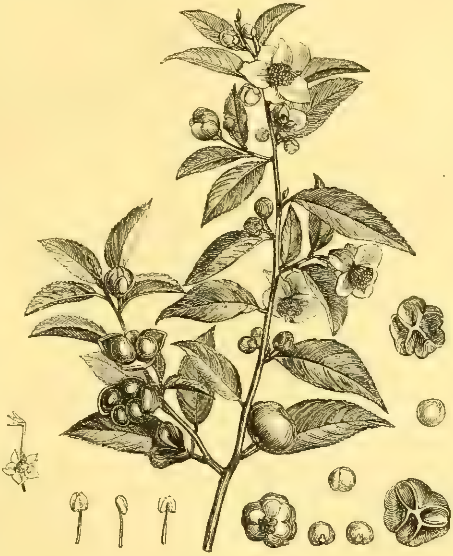


Fig. 2.—The Black Tea Plant (Thea Bohea); see p. 437.

the evils attending the roots of Vines being too wet, and the excessive moisture producing shanking, yet for one Vine that thus suffers from too much wet, there are scores that are affected by the like complaint through an insufficiency of water.

Peaches under glass that were started about the time first recommended will now require their final thinning—overcropping with these being equally a mistake as it is in the case of Vines. Keep them well syringed every afternoon, allowing the temperature to rise higher after closing the house as soon as the stoning process is complete. Remove any leaves that obstruct the light and sun from the fruit; only by full exposure can it be highly coloured. Remove all superfluous shoots, and keep those that are retained tied in. Give plenty of water to the roots, for there is no cultivated fruit that requires its roots being kept more moist; any deficiency in this respect has the certain effect of preventing the fruit swelling to its full size and the development of the wood for another year, and is sure to favour the appearance of red spider. The latest Peaches under glass will now need their fruit to be thinned, but do not at first remove too much. Thin the shoots, syringe freely, keep the soil sufficiently moist, giving air in good time in the mornings, and not closing so early as to endanger the house getting too hot.

Kitchen Garden.—More French Beans should now be sown, choosing a sheltered position, as this vegetable is very susceptible of injury by a low temperature, and we frequently experience at the end of the month nights so cold as to injure them if in an exposed situation. A few Runners should also now be put in; where sticks are scarce let the rows be about a yard apart, pinching the points off the shoots when they have grown 15 in. or 18 in. high, and allowing them to rest upon the ground.

Greenhouses.

In many cases stages in the above structures are very ill adapted to the purposes of plant cultivation on account of the large body of dry, heated air they admit under them during the summer months, to obviate the injurious effects of which various expedients have to be resorted to. Where these are of wood rising in regular gradations one above the other, the spaces between each admit such a draught among the pots as to cause the balls of the plants to dry much too rapidly for their welfare, and therefore means should be taken to counteract this as much as possible. Shingly gravel or a layer of Moss spread under the stage, and kept syringed from time to time, or damped in some other way, will be found of great service in preserving the air in a healthy moist state. The pots, too, may with advantage be well syringed at least once a day, taking care while doing so not to wet the foliage of the plants whilst the sun is shining strongly upon them, or serious injury will be the result. For general purposes there is nothing to equal a stage run up in 4½ in. brick, with the top courses set in cement to keep them in their places, as then the spaces between can be filled in with loose gravel or other suitable material that, while affording free drainage to the pots, will likewise part gradually with moisture, and keep the atmosphere immediately surrounding the plants in a cool, healthy condition —very different to what it can be where the stages are open for the air to pass under in strong currents. All watering that is necessary should now be done in the after part of the day, to give time for it to soak the ball thoroughly before any portion is again drawn out by atmospheric influence. To ensure a perfect saturation, they should be watered twice over, in case they may have shrunk somewhat from the sides of the pot, or there is not sufficient depth from the rim to admit of its holding sufficient to permeate the whole of the ball. This applies more particularly to Heaths, Azaleas, and other hard-wooded plants, having tough matted balls of earth difficult for water to penetrate. If these be allowed to become dry, it is a difficult matter to moisten them through afterwards, unless the pots be immersed in water sufficiently deep to cover them—a practice that should be resorted to in all cases where there is reason to suppose the ball is dry in the middle. Azaleas that are at all cramped for root-room will now be benefited by an occasional application of weak manure-water to assist them in carrying their flowers, which, when well managed, they always bear in such abundant profusion. If liquid manure be used, great care should be taken or much mischief will result if applied at all strong, or of a kind unsuited to their nature. A table-spoonful of guano to a four-gallon pot will be found quite sufficient, as it is better to apply it more frequently than to run any risk in administering strong doses to valuable plants. Any Azaleas that are now out of bloom should be kept in a genial growing atmosphere, to enable them to make a healthy, vigorous growth. It is surprising the amount of heat Azaleas will stand and enjoy if the air of the house in which they are placed be charged with moisture in proportion. A free use of the syringe will therefore be necessary to favour that condition, and to hold such troublesome insects as thrip in check, which are sure to attack them, if from any cause the atmosphere should become uncongenial to the health of the plants.

Humea elegans.—These will now be making rapid growth, and should be encouraged with plenty of pot room, giving them good rich soil at every shifting they receive, and a light airy position. Without full exposure their lower leaves will very soon become disfigured, a condition that detracts much from the beauty of the plants. To keep these thoroughly healthy and of a pleasing green colour, they must never be allowed to become dry at the roots or suffer a check in any way. When well grown and clothed with fine healthy foliage down to the pot, they make very elegant plants for conservatory decoration, and last in perfection for a considerable time.

Hydrangeas are likewise valuable for the same purpose when slightly forced into bloom so as to have them in before they are to be seen in the open borders. H. otaksa is a splendid variety for pot work, having immense trusses of delicately-shaded pink flowers that are very showy and effective. The double-flowered H. stellata is a very free bloomer, and makes a compact, bushy specimen, and is admirably adapted for indoor decorative purposes. Cuttings of these should be put in to grow on for next year as soon as the plants are sufficiently forward to distinguish which of the shoots are without bloom-buds, as, when taken off in the young soft state directly they are long enough for the purpose, they soon take root if placed in gentle moist heat.

Diplacus glaucus, with its polished leaves and singular-looking light cinnamon-coloured flowers, makes a very attractive pot plant, that is exceedingly useful for decoration, and effective in almost any position. To obtain plants of good size for next season, cuttings should be put in at once, and when struck placed in small pots to be hardened off for planting out at the end of May. These lifted again in the autumn form larger and better grown plants than those that are confined to pots during the summer, unless the latter are well cared for and kept supplied with plenty of water to prevent the growth getting hard and woody too soon in the season.

Hedychium Gardnerianum, whether viewed for the beauty of its foliage or its immense heads of handsome-looking flowers, is alike valuable as a pot plant for large conservatories or greenhouses during the summer and autumn months. Old roots of these that have been resting during the winter should now be shaken out and divided, selecting the strongest and best crowns for potting on, when the others may either be planted out in the shrubbery border or saved for a like purpose in the sub-tropical garden, for either of which purposes they are well adapted. If grown in pots they should have good rich soil, or they will not make fine leaves or throw up stems sufficiently strong to flower in the autumn. Two-thirds of turfy loam to one of old hot-bed manure, or any other that is well rotted and of a mild nature, will suit them; and any close frame will give them a start, after which they may be plunged out in the open border till wanted for use.

Cassia corymbosa.—This fine old plant is still one of the most valuable and showy we have for autumn decoration, and should be largely grown where houses have to be kept gay at that season. An old plant cut back now and placed in heat will soon break and afford a supply of cuttings that root readily if kept in a close moist place; these, if potted on and liberally treated during the summer, will make a useful flowering subject that is sure to become valuable by-and-by. Where larger plants are required, any saved over from last year should at once be cut back and placed in gentle heat. As soon as they begin to start, shake them out from the old soil and re-pot in good fibry loam and peat, using pots of the same size as before; place them in a close pit or frame till they begin to grow freely, when they should have the lights entirely removed after gradually hardening them off. Shift on as required during the summer, and keep them well supplied with weak liquid manure as the pots fill with roots, which will ensure fine healthy plants, with the ends of each shoot laden with corymbs of bloom.

Campanula pyramidalis and C. p. alba are most serviceable plants for decorating a conservatory during the early summer months, and, from their free-flowering habit and stately growth, always command admiration. C. calycanthema is also an exceedingly ornamental variety, and well deserving of pot culture. This has a very large widely-expanded calyx of the same colour as the corolla, and as the flowers are borne in the greatest profusion, it produces a very striking effect. Both kinds should now be shifted on into their flowering pots, and, if wanted in bloom early, replaced under glass. The soil for these can scarcely be too rich, and may consist of at least one part of mild rotten manure to three parts of good loam. Offsets should be taken from the pyramidal varieties while they are undergoing the process of potting, that they may be grown on for flowering next year. C. calycanthema being a biennial, seed should be sown early so that the plants may be as large and strong as possible before blooming, that they may make the finer display.—J. Sheppard, *Woolverstone Park.*

Roses.

Examine all out-of-door Roses, and pick off any insects that may be damaging the young shoots; caterpillars will be found to be very destructive at this season, and the changeable weather which we have experienced lately will probably bring on blight, which in many parts is very destructive to Roses. The foliage of many of the early tender-leaved varieties is much injured by frost; therefore, every means should be used to restore it to health and vigour, such as administering liquid manure, to which soot has been added, to the plants. Soot used in this way is one of the best manures we can have for Roses. Where blight has set in, syringe the plants well with a weak solution of soap-suds, or soot and sulphur, in order to stop it. I have found soot used with soap-suds syringed on the trees in the evening, and washed off in the morning, to have restored trees to health that have shown themselves to be much blighted, and the leaves all crumpled up. Tie in young growths of climbing Roses, pyramids, &c., so as to keep them in shape. If the young wood be allowed to ramble too much, it hides the bloom, and thus impairs the effect which the plants would otherwise have. Thin out standards when they require it, and peg down those in beds where necessary.—H. G.

Kitchen Garden.

Hoeing between rows, should the weather be favourable, is the operation that must take precedence of all others at this time, and as all seedlings, without an exception, have come up well, weeds are sure to accompany them in great profusion; and, unless destroyed at once, they will both injure and spoil the appearance of the crops. Potatoes, too, require earthing up to protect them from frost; a few of our earliest were nipped slightly in the middle of April, and as there were several stems of haulm to each set we pulled off those most injured, those that were left are now growing as freely as if no harm had ever happened to them. Broad Beans also require earthing up, and the earliest will soon be ready for topping. French Beans are just making their appearance above ground, and must have the soil drawn over them to shield them from frost; another sowing of both these and Runner kinds should now be made. Seakale is now over for the season, so that now all blanks in the plantation should be made good. The latest supply can always be obtained by covering up with cinder ashes; spread these afterwards on the ground with a dressing of salt and dig them in; the crowns should be reduced to three shoots, it being weakening to the plants to allow all that form after cutting the Kale to grow; new beds may now be made with cuttings, or in lieu thereof, seeds sown. Asparagus forcing is also now over, the open-air beds furnishing an abundance. I never recollect it to have been so late as it is this year; hitherto, I have always been able to cut by the first or second week in April, but this season the first open-air crop was not ready till the 25th. The beds should be looked over daily, and all that are 6 in. high (not before) should be cut and tied in bundles and kept till required in saucers of water in a cool shed or cellar. The main object for growing Asparagus is that it may be eaten, but the flavour of this delicious esculent is much marred when it is sent to table in such a blanched and, consequently, such a tasteless condition. I never allow Asparagus to be cut lower than the level of the soil in which it is grown; the entire head can then be eaten in place of leaving a long blanched stem. Plant new beds according to requirements. I can discern no difference between the variety known as Conover's Colossal and the ordinary kind. Rhubarb plantations will now need renovation and filling up, especially where roots have been lifted for forcing; these may be divided into single crowns, and will do much better than if they were larger. Keep them clear of seed-stems, which always show in abundance at this period of the year. Autumn-sown or Spanish Onions are now growing fast, and, if wanted very large, they will now take any amount of feeding. A strong solution of soot-water is as good a stimulant as can be given to them. They should have been thinned out long ago, but, if not yet done, there is ample time for good Onions if planted on well-enriched ground. Part of them should be left thicker on the ground, and thinned out for use as soon as the old Onions are over. Turnips are about the most difficult crop one has to deal with in the kitchen garden, for first of all the seeds must be netted as soon as sown to keep off birds; next the Turnip fly is always hovering over them; and, lastly, if the soil be light and dry weather prevail, they soon become stringy and strong to the taste. To obviate this latter difficulty, all but the earliest sowing should be sown on north or east borders, and in this manner I rarely fail to get a good supply. For the fly, give a good dressing of wood-ashes and soot twice or thrice as soon as they appear above ground, covering at first with netting. A good breadth should now be sown. Veitch's Red Stone we find the best for general cropping. The first lot of Celery will shortly be ready to be transferred to the trenches; a showery or dull day should be chosen for this, and the plants should be moved with all the soil possible adhering to their roots; if necessary, it is easy to protect them with a few evergreen boughs laid across the trenches. Prick off successional supplies, and get trenches ready for them as the ground is cleared of Broccoli, the old stems of which should be dug up the moment the heads are cut. The Broccoli season will soon be over, and it will now be well to compare notes as to the kinds to grow in future. The best I have found, beginning with the earliest, are—Snow's Winter White, Early Penzance, Cooling's Matchless, Sutton's Late Queen, and Landers' Goshen Late White. A sowing of late kinds should now be made, and also of Walcheren and Purple, and White Cape for autumn supply. Lettuce should now be sown thinly where it is intended to be grown, and thinned out to the required distance when large enough to handle. As summer approaches I never plant out Lettuce, for, should a dry period ensue, an immense amount of watering is required to get them established, and a few extra seeds prevent all this. Radishes should be sown fortnightly, and as the Turnip-rooted kinds stand the heat and drought best, they only should be sown. A regular supply of Mustard, Cress, and herbs required for salads should be kept up by sowing a little of each at frequent intervals. Renew the linings to Cucumber frames, and make up slight hot-beds, on which to start Ridge Cucumbers and Vegetable Marrows, both of which may now be planted out, provided they can have the protection of hand-lights for a week or two. Tomatoes may shortly now be planted out; they should, if possible, have a southern aspect, and be trained either to a wall or a fence, though I have known them do well on a sunny ridge, and allowed to ramble the same as Vegetable Marrows.—W. Wildsmith, *Heckfield.*

SOCIETIES AND EXHIBITIONS.

THE GREAT FLOWER SHOW AT BRUSSELS.

This exhibition, one of much importance in Belgium, was a remarkably fine one of its kind; but, inasmuch as it only possesses interest for our own readers in the respect in which it differs from English shows, we propose to say but a few words on these points, and refer those who desire more details to the list of prizes published in the outer portion of the paper. In this way we avoid the mere repetition of entries of plants which have no special interest. The most striking features of the show were the fine groups of plants sent by London nurserymen. There were enough English plants to make a very large floral exhibition of themselves. Some of the leading nurserymen, at great cost and pains, sent many of their finest and rarest plants to this show, and in the classes in which they competed were awarded the highest prizes. Messrs. Veitch sent one of the finest collections of new plants in numerous kinds that even they have ever staged. Mr. Williams won the King's prize for the foreign horticulturist who made the most beautiful display. Mr. Bull won the much-coveted prize for the best collection of new plants not in commerce. Mr. Wm. Paul sent a whole garden of Roses; and Mr. Wills came and won with his Dracænas in the very home of Dracæna cultivation. Several large vans were in some cases required to carry the plants from London, and as thirty-six hours is the shortest time in which such heavy goods can be conveyed from London to Brussels, the difficulty of bringing choice plants may be imagined. As it was, the Roses in Messrs. Veitch's collection suffered much—the flowers falling as soon as unpacked. The spirit and enterprise of English nurserymen is therefore deserving of acknowledgment in this as in many other cases.

Arrangements.—These differ from ours, inasmuch as the plants are on the first day placed in any way convenient for judging. On the following day, when the judging is completed, the hall is given over to a gentleman—charged with the grouping of the whole for effect—and his assistants, and before noon the next day the whole place is transformed. It need hardly be said that the time allowed at our exhibitions precludes such plans in our case; at Brussels, for arranging, judging, &c., and the duration of the show, nearly two weeks were required. As regards the result of the final arrangement and grouping, it was effective, though by no means remarkable; the ugly temporary building in which the whole was arranged was in some degree the cause of this. The principle adopted was the simple one of throwing the larger groups of Palms and fine-leaved tropical plants of all kinds into imposing groups and masses, mostly at the ends and sides. Straight walks were also avoided, and this prevented dense masses of people filling up vistas, to the injury of the general effect. Looking along the centre of one of the spans of the building, flowers and plants were everywhere seen; an effect like a crowded street is common in similar cases, though far from desirable. As regards the grouping of the masses, smooth gradually rising banks were everywhere to be seen. This is, in nearly all cases, the wrong way, as much of the form and contrast naturally afforded by the plants is thereby hidden. The right way is to give full expression to any remarkable or stately form by allowing it to stand forth free from its surroundings. Instead of placing the tallest and most effective plants behind, the best way will often be to bring them to the very margin of dwarf groups. One evil avoided in this show was that resulting from blank spaces, badly set-up groups, &c., the whole receiving in the process of re-arrangement a desirable finish and unity. Under this head we may also speak of the hospitable arrangements made for foreign exhibitors and guests—in corroboration of which the reception at the Hôtel de Ville, the dinner given by the King and Queen at the palace, and the banquet on May 1, may be mentioned.

Azaleas.—The most brilliant effect of the exhibition was afforded by exceedingly well-flowered plants of Azalea indica in many varieties, all trained umbrella-fashion, with hemispherical heads borne on clear stems about 18 in. high. These were so grown and trained that the whole upper surface of each plant was a dense mass of flowers, and there were many beautiful varieties. Placed close together in large groups the effect was that of small; gently sloping mounds of often vivid and often lovely colour. Probably neither this type of Azalea nor the pyramidal ones with which we are more familiar, will satisfy the taste of many who think the plant should be trained in a more free and natural manner, but of the two existing styles the one shown here is the best, because it prevents the tendency to one-sided training, of which we have seen so many examples. Very remarkable are the many new kinds of Azalea indica now being raised here—double and semi-double of the most delicate pure colours or pencilled; some are nearly as double as a Camellia, and some are as large as the flowers of the large Indian Rhododendron; no doubt many of these are destined to be welcome additions to our greenhouses.

New Plants.—These were for the most part plants of leaf-beauty only; flowering plants, with any claim to novelty, were very few, and these not noticeable for beauty. Mr. Bull won the first prize for six new plants, introduced by the exhibitor and not in commerce, with Aralia splendidissima, Pritchardia grandis, Croton elegantissimum, Dieffenbachia Shuttleworthii, Dieffenbachia Chelsoni, and Alocasia Johnstonii. Messrs. Jacob-Makoy, of Liège, were second with Anemia tessellata, Aphelandra illustrata, Liparis elegantissima, Maranta Massangeana, Paullinia thalictrifolia argentea, and Ruellia Devosiana. Mr. Bull was also first with three new plants, Dieffenbachia regina, Croton Hendersoni, and Aralia spectabilis; and Mr. Williams second with Photinia serrulata variegata, Dieffenbachia Parlatorei marmorata, and Zamia crassifolia. The new double and single Azaleas, elsewhere spoken of, were the most interesting novelties in the way of flowering plants in the exhibition. Among M. Van Houtte's plants were—Azalea indica Reine des Belges, Massange de Louvrex, Herman Lubbers, Oscar La Marche, Prof. Ed. Morren, Dr. Herm. Wendland, Louis Blommaert, and Mme. Aug. Lemonnier; M. Roze, of Mayence, had also some new Azaleas of remarkable beauty.

Dracænas.—These handsome plants have of late attracted more than their usual share of attention, from the many remarkable varieties raised from seed by Mr. Wills, who sent the cream of his collection here, and won the first prize, the great novelty, (as well as the good culture and beauty of Mr. Wills's plants, placing them before the superb collection of better-known kinds shown by Mr. Linden. There were also fine examples of cultivation, and though some of the plants were 6 ft. high, they were all stated to be the result of one year's growth. As, however, Mr. Truffaut, of Versailles, strikes from cuttings, and makes the finest kinds of Dracæna in a month or five weeks into handsome plants, rapid culture is now becoming more common. It is an important point in favour of these valuable plants for decoration that they may be grown as rapidly as those which we are accustomed to call soft-wooded plants in England. It is, however, as well to state that such success has been obtained where there are abundant and special means of cultivating tropical plants. While giving full credit to the raisers and introducers of the variegated Dracænas, it is as well to point out the great value of the green-leaved kinds. A specimen of D. grandis, a noble green-leaved kind, was the finest in the exhibition, and was a marvel of stateliness and grace. We may add that the exhibition was very rich in Palms, of which Mr. Linden furnished numbers of well-grown specimens from his unrivalled collection at Ghent.

ROYAL HORTICULTURAL SOCIETY.

May 3rd.

Amongst the more remarkable plants exhibited on this occasion, was an effective group of Azaleas from Messrs. Veitch & Sons; new forms of Mignonette in admirable condition from Messrs. Carter & Co.; and a select batch of Alpine and show Auriculas from Mr. Charles Turner, of Slough.

First-class Certificates.—These were awarded to the following new and rare plants:—

H. P. Rose Duke of Connaught (Paul & Son, Cheshunt).—This is one of the very finest of all dark crimson Roses; we gave an account of it last week.

Azalea Duke of Edinburgh (W. Parsons).—This is a very large-flowered variety of good form and substance. The colour is bright rose, inclining to salmon, and it promises to be a desirable addition to existing kinds.

Clematis Proteus (Noble, Sunningdale).—This is a distinct large-flowered variety, bearing semi-double flowers of a rosy-purple colour, the anthers being nearly white. It is a very variable plant, but, as shown, decidedly ornamental and well worthy of culture.

Primula cortusoides amœna laciniata (Dean, Bedfont).—A distinct and effective form of the Cortusa-leaved Primrose, having large cut-petaled flowers of the richest magenta colour, and much larger and certainly more elegant in outline than those of the P. c. amœna.

Pyrethrum aureum laciniatum (Osborn, Fulham).—This is a dwarf cut-leaved form of the well-known Pyrethrum Golden Feather, and one which will be very useful for bedding purposes. Its colour is a soft greenish-yellow, and contrasted with Lobelias, or as shown with Gentiana acaulis, it is very effective.

Pelargonium grandiflorum var. Queen of Stripes (Rawson, Bromley).—A compact-habited plant, from 6 in. to 12 in. in height, and most floriferous. It is very distinct from all others in cultivation, the flowers being of a bright rosy colour, with vermilion-scarlet carhation-like stripes. The upper petals are also pencilled with velvety black; as a decorative plant it will be most effective and useful.

Auricula Gertrude Knight (Turner, Slough).—A distinct and very large-leaved green-edged variety, bearing a compact truss on a stout well-elevated scape. The individual flowers are of good form, and the paste white and dense; its fault, if any, lies in the eye being a trifle too large in proportion to the rest of the flower; the ground colour is deep purple.

Auricula Charles Lidguard (Turner).—This is also an Alpine variety, having large flat dark crimson flowers and a rich golden eye, which sets them off to much advantage.

Primula Golden Queen (Miller, Upway, Dorchester).—A distinct yellow orange-eyed hose-in-hose form of Primrose or Oxlip, which promises to be of service for spring bedding.

Miscellaneous Plants.—Messrs. Veitch & Sons contributed a very effective group of Clematises in bloom, amongst which we remarked Miss Bateman, white; Lady Londesborough, lilac; and Albert Victor, also satiny-lilac. From the same firm also came a vigorous plant of the large golden-flowered Oncidium Marshallianum, bearing a huge, branched spike, furnished with about twenty-six flowers, resembling great golden butterflies. Messrs. Veitch also sent six very distinct and effective new Azaleas, among which we noticed Marquis of Lorne, a distinct semi-double scarlet; Madame Marie Lefevre, a large white-flowered variety; Princess Louise, a delicate, rosy salmon-tinted double-flowered variety; Charmer, a satiny crimson, very floriferous, and distinct; and Baron de Vriere, a large variety, with frilled white flowers here and there splashed with red. Mr. Dean showed a small group of hardy flowers, comprising a slender-habited Aquilegia, raised from seeds of A. chrysantha, but generally believed to be a form of the American A. canadensis. Mr. B. S. Williams furnished an effective and well-arranged group of Ferns, Pandanads, Crinums, Dracænas, and other fine-foliaged plants. Mr. Buchanan, Southampton, showed four fine trusses of the large-flowered Rhododendron Nuttallii, one of the finest of all the Sikkim Himalaya species. Mr. Laing, Stanstead Park, sent a very beautiful Caladium, named Madame de la Deransaye; it somewhat resembles the old Chantini, but has pink veins. Mr. Smith, Spring Lodge, Sydenham, contributed a robust-flowering plant of Odontoglossum Andersonianum, and also well-grown examples of Masdevallia Harryana and M. Veitchii. Mr. Cripps showed two fine specimens of Clematis in pots; one, named Souvenir de J. Standish, had large eight-sepaled lilac flowers of the C. lanuginosa type; and the other, named Lilian, had delicate bluish-lilac flowers of exquisite form. Two large baskets filled with Gentiana verna came from Messrs. Osborn, of Fulham.

Fruit.—From Mr. John Chester, Conington Castle, came a useful seedling Apple; and Mr. Rust, of Eridge Castle, forwarded three dishes of seedling Apples in a very good state of preservation. Messrs. Lane & Son, of Berkhamsted, sent six or eight clusters of Muscat Grapes, in order to show the result of setting under damp treatment; they were certainly most profusely furnished with healthy young berries, about the size of Peas. Some of these bunches could not measure less than from 12 in. to 15 in. in length.

NOTES AND QUESTIONS—VARIOUS.

Destruction of Primrose Blossoms.—What "Essex" (p. 380) complains of is caused by birds, chiefly sparrows, which are very destructive here. I have watched and seen them destroy not only the blossoms of Primroses, but also those of Plum and Cherry trees, the ground under which has been covered with their petals in a few hours.—W. Divers, *Weirton House, Maidstone.*

—— I think I can throw some little light on the subject complained of by "Essex" (see p. 380), and by "A. D." (see p. 407). A few years ago when some Ivy against a wall in my garden was being clipped, a starling's nest, just built, fell to the ground. With the ordinary materials composing the nest, I found pieces of three or four kinds of plants, stems, leaves, and flowers—evidently the birds had been aiming at a little decoration. One summer when I had a plant of Delphinium nudicaule, the blackbirds plucked all the flowers off it, probably mistaking them for ripe fruit. My Primroses have suffered in the same way as complained of by "A. D.," and I give the birds the credit of the mischief; possibly they may eat small portions of the petals, or if not, destroy them from wantonness.—G. F.

Hardiness of Anemone fulgens.—The severe frosts and heavy snow which we have lately experienced in Leicestershire, and which have destroyed nearly every early flower which had ventured to peep forth, have had no ill effects upon this Anemone; on the contrary, the warm sunshine which has lately set in, and which has succeeded in melting nearly 1¼ ft. of snow, revealing how Daffodils, Hyacinths, Polyanthuses, and similar flowers have been destroyed, has brought this spring gem out in all its brilliancy. It looks none the worse for the unseasonable weather through which it has passed unprotected, and it is now attracting general attention.—John Biddles, *Loughborough.*

No. 234.] SATURDAY, MAY 13, 1876. [Vol. IX.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

GROUND ORCHIDS.

The representatives of this portion of the Orchid family are more widely distributed over the globe than those of an epiphytal character, for, although in tropical countries the latter-named varieties predominate, as we trace Orchids through the cooler latitudes we find the epiphytal varieties gradually give place to the terrestrial, until in cold countries the epiphytes are lost, and the Orchids are all terrestrial, these latter having many representatives in Great Britain, North America, and some even in the most northern parts of Russia. In warm countries many of the varieties commonly found growing on the ground are frequently to be met with on the larger branches and the trunks of trees, the genera Cypripedium and Pleione being particularly liable to these variations; but, as under all circumstances they are found in some depth of accumulated vegetable deposit, under cultivation they succeed best when treated as true terrestrial Orchids. In order to prevent confusion, these remarks will not be confined to those varieties found growing on the ground only, but will include a few sub-terrestrial kinds requiring similar treatment. Evergreen terrestrial Orchids differ mainly from the epiphytal varieties in that they require but a short period of rest, most of them growing throughout the whole year, except during the short period that they are in bloom, and at this time they should be placed in a somewhat cooler and drier house, which will give the plants a rest, and also preserve the flowers, which would otherwise be injured by the damp atmosphere of the growing house; but even during the brief resting season the evergreen varieties should not be allowed to get quite dry. All deciduous terrestrial Orchids, such as Calanthe vestita, the Pleiones, &c., require as distinct a resting season as the epiphytal Orchids, and on losing their leaves should be placed in a cooler house and not be watered until they show signs of renewed growth. Both the evergreen and deciduous kinds thrive best in pots, which, for the stronger-growing sorts, should be larger in proportion to the size of the plant than those used for epiphytal varieties, and should be crocked one-fourth of the way up, placing a layer of Sphagnum Moss over the crocks, and on that a layer of charcoal mixed with equal parts of the most fibry portion of the soil; let this compost occupy about one-third of the pots for strong-growing plants, and one-half for the smaller-growing kinds. In potting a terrestrial Orchid, turn the plant out, and remove as much of the old soil as possible without injuring the roots; then take a suitable-sized pot, previously prepared as directed, place the roots in the pot, keeping the crown of the plant a little above the level of the rim; fill in carefully between the roots with the compost in use, not pressing it too hard, and leave the plant in such a position that when it settles down a little the crown or neck will be level with the rim of the pot, always bearing in mind that, although some of the Cypripediums and a few others of like habit are rather benefited than otherwise by being kept a little above the pot, the strong-growing kinds, such as Calanthe, Phajus, and most other terrestrial Orchids, thrive best below the rims. With regard to the best time for potting, the most intelligible rule, and one that holds good in all cases, is, that the plants should be potted soon after they have done flowering, for most of the terrestrial Orchids flowering out of the mature growth, or with the newly started young growth, and not having pseudo-bulbs to supply them with nourishment and carry them over any check they might receive, if potted at any other time, are likely to be prevented from flowering, and if not in a sufficiently warm place to induce them to grow the plants will be injured; but as it is desirable to place them when in flower in a cooler and drier house, and as they are frequently used for decoration in the dwelling-house during that period, care should be taken, when the plant is out of flower, that it be not potted out of the cooler house or dwelling house and then transferred to the warm house to grow, but that plants should be placed in their selected positions for at least a week before potting, it being a great mistake to pot any Orchid, either terrestrial or epiphytal, from a cold house and place it in a hot one, or *vice versa.* The whole of the evergreen, tropical terrestrial Orchids will succeed well in an ordinary cool stove or intermediate house mixed with other plants, and will require no different treatment, except to be moved to the cooler and drier end of the house while they are in bloom. Lest amateurs should be in doubt as to which are terrestrial varieties, it will be well to enumerate some of the leading kinds, together with a few others which are sometimes found on rocks or low down on the trunks of trees, and therefore have been found to succeed best when treated as true terrestrial Orchids.

The evergreen Calanthes are noble-looking plants either in or out of flower. C. veratrifolia, bearing spikes of snow-white flowers, often 3 ft. in height, and lasting a long time in perfection; there are two varieties of this plant, one being early winter flowering, and the other coming in at the commencement of summer. C. Masuca is similar in habit to C. veratrifolia, but has mauve-coloured flowers. C. curculigoides grows about half the size of the above two varieties, and has yellow flowers. C. furcata and C. Dominii, the latter being a hybrid raised in this country, and having lilac and purple flowers, are also beautiful varieties of this section; they succeed best in a mixture of two-thirds turfy loam and one-third leaf-mould. Many good cultivators mix manure with the compost used for potting strong-growing terrestrial Orchids, and produce very fine plants; but equally good ones are to be grown without it, and as manure of the requisite quality is not always to be obtained, the amateur will find it better to adhere to the natural soils as recommended above. The Calanthes are from India, Java, &c., and should be grown in a warm, airy house. Calanthe vestita rubro-oculata, pure white, with crimson centre; C. vestita luteo-oculata, the same with yellow centre; C. vestita nivalis, all white; C. vestita Turnerii, white, with rose centre: and C. Veitchii, rosy-pink, are all deciduous kinds, and should be grown in a warm house, and kept well supplied with water until they flower, after which they should be placed in a cooler house, and water withheld until they show signs of a renewed growth, when they should again be placed in the warm house and shortly after potted. The soil recommended for the other Calanthes is the best with the addition of a little silver sand.

Limatodes rosea requires similar treatment to the deciduous Calanthes, which it resembles, but should be potted in two-thirds peat and the rest loam and silver sand.

Phajus grandifolius, P. Wallichii, and P. bicolor, are large-growing evergreen Orchids, resembling each other in habit and in the character of their flowers. P. maculatus has large deep green leaves beautifully spotted with yellow, and bears spikes of large clear yellow flowers; they come from North India, Ceylon, and China, and should be placed in a warm house, and after the growth is matured be transferred to a much cooler house, and but sparingly watered for a time; their flowering season is winter and spring, but by careful management they can be flowered at almost any other time. They require the same soil as the evergreen Calanthes.

The Bletias are elegant-growing Orchids of deciduous habit, throwing up their slender spikes of generally rose or purplish-coloured flowers from among the leaves. They thrive in the same compost as the deciduous Calanthes, and should be grown in the intermediate house, after which they should have a good resting season in a cooler house, not withholding water altogether.

Sobralias are handsome plants, often 6 ft. in height, and bear large light or dark rose-coloured flowers on the tops of their reed-like stems; they succeed best in the intermediate house, potted in sandy peat, and only require a little rest while in flower.

Epistephium Williamsii and E. grandiflorum are like the Sobralias in habit, but have their flowers, seven or eight, on a spike.

Lissochilus Horsfallii is a rare and beautiful variety from Old Calabar; it has the general appearance of Phajus grandifolius, and should, as far a possible, be treated in the same way

Cymbidium eburneum, C. Mastersii, and most of the strong-growing Cymbidiums, are often found growing among rocks; the two varieties named are certainly the best. C. eburneum flowers in spring, and has large ivory-white flowers, generally produced in pairs. C. Mastersii has long drooping spikes of white flowers, ten or twelve on a spike, each flower about one-third the size of those of the other variety. They come from the hills in India, and are found growing at an elevation of 6000 ft., consequently they will not thrive for any length of time in a hot-house; they should be potted in turfy loam or turfy loam and peat, and placed in the intermediate house, and, when in flower and for a short time afterwards, rested in a cold house, water being given them the whole year round.

Peristeria elata and the strong Zygopetalums should be potted in one-half turfy loam, and the other half peat and silver sand: the former should never be watered heavily, nor rested in too low a temperature.

The Pleiones are small-growing gems among Orchids, and are generally supposed to be difficult to grow, but this is not the case when the habits of the plants are studied. They all come from high elevations in India, and should be grown on a shelf in the intermediate house, being freely supplied with water while growing; after the bulbs are fully formed water should be withheld, and the plants placed on a shelf in a cold dry house until they throw up their new growths and the flowers with them, which will be in October or November; they should then be given a slight increase of temperature until they have ceased flowering, and then potted and placed on the shelf in the intermediate house to grow; this system, repeated annually, will ensure success with these lovely little plants. They thrive best potted in one-half turfy loam and the other fibry peat, with a little silver sand.

Stenorrhynchus speciosus and S. maculatus are beautiful plants for winter flowering, the latter not being met with so often as it deserves, it being a beautiful plant with variegated foliage and scarlet flowers. The Cypripediums are a large class and very easy to manage; most of the barbatum and Stonei class grow best in the warm house, but the section Selenipedium, with narrow bright green leaves, thrives best in the intermediate house; they grow all the year round, except a short time when in flower, and should be watered freely; the greater part of them succeed in one half peat and the other half Sphagnum Moss and silver sand; but the Selenipediums like the addition of a little turfy loam.

The varieties of Anæctochilus and Goodyera are much sought after on account of the beauty of their leaves, which are indeed marvellous, but as the Anæctochili require special treatment, I will leave them for a future notice, when they can be more fully discussed; in the meantime, the amateur wishing to try his hand on this class is recommended to begin with the Goodyeras, which are not so delicate or costly. They grow best in a warm house, in a shady place, without a bell glass, and potted in one half peat and the other half Sphagnum Moss and silver sand.

Pogonia discolor grows freely, and has large leaves of the greatest beauty, shaded orange, red, brown, and green.

The list might be continued with other species, such as Anguloa, Lycaste, Catasetum, Galeandra, Masdevallia, &c., many of which might be considered sub-terrestrial; but as their culture is not the same as the others, I shall at present refrain from noticing them. Next week I will offer a few remarks on the culture of the greenhouse and hardy varieties.

James O'Brien.

Pine-apple Salvia.—From the selection of Sages in your last number (see p. 430), is absent the species known in greenhouses as the Pine-apple Sage. The leaves, which are about 2 in. long, have a strong and pleasant odour of Pine-apples. The flowers are scarlet in long spikes. I shall be happy to exchange cuttings with anyone desirous of having this species for any of the finer hardy sorts.—Salmoniceps.

Various Kinds of Hybrids.—According as the union takes place between different varieties of one species, different species of one genus, or between two species belonging to different genera, the resulting hybrid may be termed a variety-hybrid, species-hybrid, or genus-hybrid. When a hybrid is made to unite with one of its parent-forms, or with another parent-form, or with a hybrid of different origin, the product is termed a derivation-hybrid.—Sachs.

Grafting Tea Roses.—Mr. Richard Smith, of Worcester, grafts Tea Roses by the thousand on the Manetti stock. This is done in November, and some of the plants grafted at that time flower in the following May. Of course the plants are grafted in a warm propagating house or pit.—B.

FURNISHING FLOWER BEDS.

Flower beds will be later this year in being planted than usual, in consequence of the backwardness of the season; indeed, beds of Wallflowers, Aubrietias, Pansies, and similar spring-flowering plants, will be masses of bloom until the end of the month, and one is reluctant to uproot and destroy them. When taken up it is often found that they have greatly impoverished the soil, and to make amends for this a quantity of it is removed, and some thoroughly-decayed manure and fresh earth are added before Pelargoniums and other summer-flowering and fine foliaged plants are planted. In cold localities failure frequently arises from planting in unprepared soil; beds for Calceolarias, for instance, should not only be deeply dug, but an ample supply of manure should be worked into them some 18 in. or 20 in. deep, in order to entice the roots downwards. Calceolarias often die off suddenly during summer, a circumstance in a great measure owing to want of preparation previous to planting. Such plants as Petunias, Ageratums, and the stronger-growing types of Zonal and other Pelargoniums, although they need deep soil preparation, yet do not require much stimulating material. Where luxuriant foliage is the object aimed at, the manure should be worked into the soil from 12 in. to 18 in. deep; but where only a moderate amount of foliage and an abundance of bloom are desired, the enriching material should be kept near the surface, and the poorest soil the deepest down in the bed. In wet seasons, many of the finer-flowering Pelargoniums have a tendency, in deeply-prepared beds, to produce foliage instead of bloom. Surface-manuring therefore promotes a free growth at first, or at least gives the plant a start in life; afterwards the roots go downwards into the poorer soil, when mere leaf-growth is checked, and a disposition to bloom is encouraged. Breaking up the soil to a good depth has the advantage of rendering the plants and the cultivator, to a great extent, independent of the season, let it turn out what it may. If it be cold and rainy, the excessive amount of wet passes off freely; if it be hot and dry, the roots penetrate deeply in search of food and moisture, and in proportion to the deep stirring of the soil does the moisture rise to sustain the plant, a fact well known in kitchen garden culture. Another cause of failure arises from turning the plants out of their pots in a comparatively dry state. Under such circumstances the water enters the surrounding soil, and passes off without moistening the ball. Therefore, whether the plants are in pots, or planted in temporary beds or boxes, they should be properly moistened before they are transferred to their summer quarters. The inexperienced, too, should guard against planting out when the ground is wet, or when rain is falling. When the ground is wet, soils, particularly cold, heavy ones, cannot be worked so as to properly accommodate the small fibres, and the surface becomes baked as hard as a pie-crust, a condition which quite shuts out the beneficial influences of both sun and air. Such plants as Stocks and Asters are all the better for being put out when the soil is damp, provided the operator is not compelled to tread on the ground, but in the case of all ordinary bedding plants, it is best to put them in when the beds are tolerably dry. When planting from pots, if the roots be firmly matted round the ball, they should be disentangled a little before being placed in the soil, in order that they may enter it more freely. Many plant out Pelargoniums, Verbenas, and similar subjects in temporary beds to harden off previously to planting them out in their permanent quarters, and when that is done the small rootlets surrounding the ball take to the fresh soil at once. It is a mistake to water as soon as the plants are put out. When this is done early in the season—say in the end of May and the early part of June—it tends to cool the soil, to the disadvantage of the roots, while, on the other hand, the dryer and rougher the surface, the warmer and the better do they succeed. If the plants be in proper condition when planted out, they will not require water very soon after that operation; and should they flag a little during bright sunshine, a sprinkling overhead will be of more advantage to them than a flood at the roots. When it is necessary to water, it should be given at least as warm as the air is when it is supplied, and the Dutch hoe should be run over the beds as soon as possible after the application, in order to open up and aërate the soil.

R.

NOTES OF THE WEEK.

—— Sweetbrier is one of the many "old-fashioned plants" which may be found in Covent Garden at this season. It is brought established in 5-in. pots, in the shape of compact specimens about 6 in. high, handy for those who desire miniature bushes of this old favourite in their rooms. If surfaced with Sibthorpia or some other modest herb, the effect of the pots would be improved.

—— Garibaldi is the name of a Strawberry extensively forced for the market by Mr. Bennett, of Rabley; it seems to have merit as a forcing kind, being long-bearing, bright and rich in colour, and good in flavour. Mr. Bennett's plants have been gathered from eight times this season, and he says the last gatherings have furnished the finest fruits.

—— A second edition of Miss Hassard's book on "Floral Decorations for the Dwelling-house" has appeared during the week. This edition is especially for American readers, and contains some changes and additions to meet the wants of Americans.

—— The work yet to be done by raisers of late Apples is suggested by the fact that at present no good dessert Apples are supplied from Covent Garden. The Sturmer Pippin does not sell on account of its colour, and the Calville is too high in price; usually Apples of poor quality, but high colour, are supplied and placed on the table, but not eaten.

—— Among the various pretty double Buttercups that flower at this season the Queen is the one called Ranunculus speciosus fl.-pl., a dwarf plant bearing very large golden double flowers. It is perfectly hardy round London, but seems to bloom best on very sandy soils. We were recently much pleased with the beauty displayed by a bed of it in Van Houtte's nursery at Ghent.

—— Even in days when the Narcissi were wholly neglected in private gardens, and that is only a few years ago, the Poet's Narcissus was cultivated for the London flower-market, in which various forms of it may now be seen in quantity, as also the Twin-flowered Daffodil. More valuable than these as cut flowers are such noble kinds as N. maximus, N. Horsfieldi, and various single and double sorts not yet seenin the flower-market, though getting plentiful in cultivation.

—— The Wood Forget-me-not (Myosotis sylvatica) is now sent in quantity as a cut flower to Covent Garden Market, grown mostly by Mr. Neighbour, near Hounslow. Thus we now have three Forget-me-nots extensively used for the supply of the flower-shops—the common brook-side Forget-me-not (M. palustris), the early one (M. dissitiflora), and the Wood Forget-me-not. The Azorean Forget-me-not, with its dark blue flowers, would be equally useful, if it were as hardy and as easily grown generally.

—— Among Alpine flowers now in bloom, the gem is the delicate sky-blue Omphalodes Luciliæ, the flowers of which are much larger than those of the old Omphalodes verna, and the habit most graceful. It is somewhat difficult to manage; but Mr. Wilson supposes that the difficulty is mainly owing to the fondness of slugs for the plant. Since surrounding it with one of the perforated zinc protectors alluded to at p. 461, not a leaf has been touched, and the plants are now growing and flowering vigorously.

—— At the Alexandra Palace Flower Show, which took place on the 6th inst., a very distinct and handsome Alpine Auricula, named "William Bragg" (Turner), was awarded a certificate of merit, a distinction so beautiful a flower well deserved. The variety in question is what is called a "pin-eyed" flower; that is, the style or pin protrudes beyond the thrum or cluster of stamens, and florists of the old school have long considered this a fatal defect, the result being that hundreds of lovely flowers of this class have been sacrificed during the last half century. We are therefore glad to see this absurd rule thus practically abolished by judges who are themselves Auricula growers.

—— Mr. Moggridge, writing to us from Bina Gardens, South Kensington, says—It may be of some interest to your readers to know the *relative* order in which the shrubs bloom in the beautiful parks and gardens of London. I will not encroach upon your space by giving the different lists from which my conclusions are drawn; suffice it to state the result, viz.:

1st. St. James's Park.
2nd. Battersea Park.
3rd. Kensington Gardens.
4th. Botanic Garden, Chelsea.
5th. Ranelagh Gardens, do.
6th. Regent's Park.
7th. Victoria Park.

As the seasons roll on different climatic conditions may produce different, though probably not much, varying results; I speak of the spring of 1876.

THE FRUIT GARDEN.

SETTING FRUIT BLOSSOM UNDER GLASS.

Many different opinions have lately been advanced on this subject; some have achieved the greatest success by means of a liberal use of the syringe on the expanded blooms, while such practice in the hands of others has resulted in failure. How is this to be accounted for? Very easily—on the one hand the trees have been treated in a natural manner, and on the other quite the reverse. A few years ago, as I passed through the fruit-houses in a garden in which Vines, Peaches, and Nectarines were grown in pots, the day being very hot, I observed, about three o'clock in the afternoon, that the foliage was mostly drooping from want of water, and that a fine crop of red spider was brooding. I asked if it were usual to allow fruit trees to droop in that manner, and was informed that they were never watered till shutting-up time, at four o'clock on hot days. Treatment of this description impairs the feeding power of the roots, as well as prevents the perfect formation of the flower-buds; after which neither the syringe nor camel-hair brush will produce the free setting of the fruit. Another bad practice is turning the plants out-of-doors and exposing them to the hot sun without sheltering the pots, thus giving them a good baking to produce fruit-buds. Under such treatment most kinds of stone fruits will produce plenty of bloom the following season, and it may look healthy to a casual observer, but most of it will be imperfect; owing to the pots being exposed to the sun, the roots get so scorched as not to be in a condition to supply the demands made upon them, and of course the bloom falls to the ground in spite of the syringe or other preventive. The same thing happens in the case of fruit trees planted in inside borders—that is, if they are allowed to become dust-dry after the fruit is gathered and the growth completed. Such extremes should always be avoided; the roots should never be allowed to become dust-dry, nor yet sodden and sour with too much water. In preparing for next year's crop, every shoot should be equally balanced, rubbing off all the rank-growing ones that can be spared. Pinch the point of any shoot taking an undue lead, which will strengthen the weaker growths and keep the tree equally furnished. Give a plentiful supply of water to the roots when required; and if the trees be heavily loaded with fruit, supply them regularly with weak manure-water, which is preferable to occasional strong doses. Use the syringe freely overhead in fine weather, in order to check red spider. When the growth is completed and the fruit gathered, the plants in pots will be benefited by being placed out-of-doors in an open airy situation on a bed of clinkers, or any other open material which will admit of free drainage, filling up between the pots with spent tan or leaves, or any other suitable material that may be at hand, which will shelter the sides of the pots from the hot sun. Supply them regularly at the roots with water, and an occasional shower overhead, given with the syringe or garden-engine, during hot, dry weather, will keep the foliage clean and plump up the buds. Should the autumn prove wet before they are housed, place two plates against the tree, so as to form a ridge, which will throw the rain off the roots and admit a free circulation of air. Supposing the Peaches and Nectarines to have been housed and brought on gradually in a genial, moist atmosphere, with aslittle fire-heat as possible, and the buds begin to open freely about the middle of February, continue the mild, moist atmosphere with the addition of a little front ventilation in accordance with the state of the weather outside; this keeps the air in motion and sweetens the atmosphere, which is beneficial to the well-being of the plants. Treated in this manner, the syringe may be used with advantage, but the same or better results may be attained by leaving Nature to take its own course. The treatment just recorded is equally applicable to the Vine, except that it requires a more liberal amount of heat during the blooming season, particularly the shy-setting varieties of it, bearing in mind that no syringing overhead should be allowed after the buds have broken—a practice pursued by some, but productive of evil rather than good results.

James Smith.

Waterdale.

STARTING POT VINES EARLY IN AUTUMN A DISADVANTAGE.

I cannot agree with Mr. Muir's remarks on this subject (see p. 328). Cultivators will, I apprehend, require more than hearsay evidence before they depart from a practice which has so long been established by facts. The point with which I have particularly to deal is "time." If Mr. Muir can start Vines at Christmas, and have them as forward as those started seven weeks previously, I should consider such a feat little short of a phenomenon in Grape growing. Such practice, if successful, would effect a great saving in fuel. The fruiting of Vines in pots is, I apprehend, to save permanent Vines from being forced during the "dark days;" and I have yet to learn that thoroughly well-ripened canes grown in this way will not yield equally well to the influence of heat and moisture in the month of November as at Christmas. Let me be thoroughly understood; there must be a thorough preparation for such work, for the man who depends upon half-ripened canes had better save his time and fuel. There is not the stamina in them to yield anything like a return for the trouble involved in the production of fruit so early. Some of my pot Grapes were ready for cutting a month ago, and I will endeavour to briefly detail my practice. I like two-year old Vines for fruiting in pots, as I can ripen them earlier than yearlings. I raise a few eyes every year for pot-work; the first year the final shift never exceeds an 8-in. pot; and at the end of the season canes are made as hard as a deal board; the second year they are treated liberally, and get a sharp season of growth and a thorough ripening in the full heat of the sun. Some growers never turn such Vines out-of-doors, but I do and for the following reason:—When I am satisfied that the ripening process is thoroughly effected I turn the pots down behind a north wall for about six or eight weeks, and I believe that when the Vines are taken indoors they are readier to respond to the call made upon them by the application of heat and moisture than if they had been otherwise treated. I think it is only reasonable to expect that a Vine taken from behind a north wall will be more susceptible to the influence of heat than one which has been grown under glass all the season, and this I consider to be a point gained in early forcing where time is the object aimed at. My pot Vines this year were grown as just described; they were started in a bed of leaves on the 1st of November, and were in full flower by the end of the first week in January, and the fruit was ready for cutting on the 5th of April. I may add that I have only taken from three to four bunches off each Vine; the berries were a fair size and as black as Sloes, with a beautiful bloom. I have now a question to ask of Mr. Muir. The first set of Vines, which were started in November, bore ripe fruit, whilst three Vines, started in the same house on 1st January under exactly the same treatment, had their fruit just thinned. Does this agree with Mr. Muir's statements? It is an established fact with me that well-grown pot Vines will stand a sharp heat without showing any diminution in the quantity or quality of their fruit; if Vines will not stand one season's sharp forcing it is the fault of the grower, but upon no consideration am I recommending such treatment, unless where proper preparation has been previously made. When Mr. Smith, of Waterdale, St. Helens, can succeed in producing such beautiful Grapes as he does in March, no one, I think, need despair, surrounded, as he is, by the effluvia arising from the various chemical works in the neighbourhood, and I should like to have his experience on the subject under discussion. W. Hinds.

Otterspool, Liverpool.

Rust on Grapes.—"G. H. G." (see p. 422) is mistaken in considering that cold draughts are more likely to cause rust on Grapes than sulphur. Rust occurs when the Vines are in bloom or when they are setting, a time when cold draughts should always be avoided. If the hot-water pipes have been sulphured, even if it should have been done some years ago, and the pipes well cleaned before starting the vinery—if they once get overheated when the Vines are in bloom or just setting, rust is sure to be the result. On the contrary, if a genial atmosphere be maintained during the time when the Vines are in bloom and setting instead of a dry parched one, there need be little fear of rust.—James Smith, *Waterdale.*

Hybrids between Siberian Crabs and Apples.—Minnesota is the State in which most of these interesting hybrids have been gained. There has been probably not less than 100 varieties of these hybrids under cultivation to some extent by the different nurserymen of this State, most of which gave promise of excellence in some respects, but owing to some of the varieties being subject to blight and others proving more fruitful and of better quality, the varieties having the least merits have been struck off the list from year to year by our State Horticultural Society and large tree planters, till we have about a dozen, possessing all the merits of the best Apples of Michigan, except in size of fruit, while some of them fall but little short in this respect. In 1869 I gathered up 100 of these hybrids of Minnesota production, and exhibited them at our State and county fairs. These ranged in size from a small Cherry to that of the Fameuse Apple, and in quality some of them were not surpassed by the best Apples.—J. B. Jordan, in "Prairie Farmer." [We fancy these hybrids would be likely to thrive in England, and they would add a desirable variety to the Apple store.]

Growing and Training Gooseberries.—What is the best plan by which abundant crops of this valuable fruit may be obtained both in a green and ripe state? Gooseberry bushes as a rule certainly do not succeed as they did many years ago nor Currants either. Would they do better on walls or trained as espaliers?—L. C. [No difficulty need be experienced in getting abundant supplies of Gooseberries, both in a green state, and also for dessert, in suitable soils and under good management when grown as dwarf standards. The chief point requiring attention is to keep them clear of caterpillars and to prevent birds from destroying their buds in winter and spring. They will likewise bear good crops when trained as espaliers, and in that case are easily covered with nets to keep off birds, and with Fir or Evergreen branches should severe spring frosts be liable to injure them when in blossom. As to training them on walls it is only north aspects on which it would be advisable to plant them, as more valuable fruit trees could be grown on the other aspects. On a north wall the Warrington bears well, and will hang in good condition until the end of September, if netted up from birds.—William Tillery.]

Manuring Orchards.—People often look at trees growing on rocky hill-sides, and argue therefrom that trees can grow without manure. They know that Potatoes and other vegetables must have manure given them or they will not thrive, but they regard trees as a different order of vegetation—something that can thrive and flourish where nothing else would. But, in the case of trees on rocky hill-sides, the land is often anything but poor. The rocks themselves frequently contain valuable mineral matter, which, as the rock decays, is presented in a form that plants can feed upon. Then, whatever vegetation grows among the rocks, remains there to decay, and even leaves and other foreign substances that blow in the crevices and land hollows, formed by the rocks, make a valuable plant food on which the tree thrives. Indeed, trees in apparently poor, rocky places, are really much better off than many trees in orchards, where they are in what appears good land. In more level land trees must be manured. In many cases it is as necessary to the best success that trees have an occasional manuring, as it is that any other crop should have manure. There have been many discussions as to whether manure for fruit trees should be applied broadcast or ploughed in. We would say that for orchard trees there is no rule. It depends on circumstances. If the trees are on ground where vegetables are grown, the manure is, of course, turned in for the benefit of these crops, and the roots of the fruit trees fight with those of the vegetables for some of it, and get it, too. But there are many orchards where there are no crops grown but the trees, and then it is excellent practice to apply manure as a top-dressing at least every other year. In a word (says the "Michigan Farmer") top-dress your orchards occasionally, if you would have them bear an abundance of good fruit; but be not troubled about what you should top-dress with.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Wilder Peach.—We may safely assert, says the "Gardeners' Monthly," that hundreds of new fruits have been widely advertised on much inferior merit to this. We should not be at all surprised if this Wilder Peach should distance all the early ones yet brought out. Of course a careful test would be necessary to give this as a positive opinion, but we really think the facts point that way.

Fruit Tree Management.—Mr. Munn, Secretary of the Missouri State Horticultural Society, does not believe in describing the management of fruit trees in the usual high colours in which it is painted. In his last report he says:—The extreme simplicity of fruit culture has been much insisted on. In this many have been greatly misled. There is a necessity for practical education. More knowledge, more experience, more of the technical training must be had to give a chance of success.

The American Cranberry in Europe.—M. Bouché, reporting on experiments in Germany with American Cranberry (Vaccinium macrocarpum) strongly recommends it for general cultivation, as it will flourish in a variety of soils. He calculates the crop to be one that would afford good remuneration to the cultivator. It would, of course, thrive admirably on many of our boggy soils. The berries, as preserved by the American growers, form one of the most agreeable preserves with which we are acquainted.

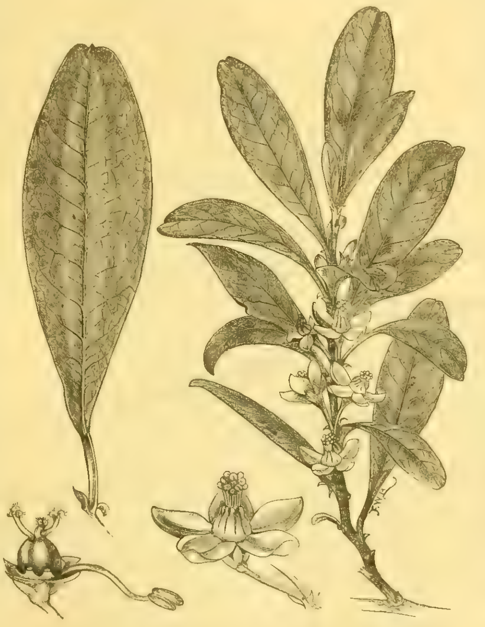
How Fruit is Preserved in Russia.—Lime is slaked in water in which a little creosote has been dissolved. It is then allowed to fall to powder, and is spread over the bottom of a deal box to about one inch in thickness. A sheet of paper is laid next, and upon that the fruit; over the fruit is another sheet of paper, and then more lime, and so on till the box is full, then finely powdered charcoal is packed in the corners and the lid tightly closed. Fruit thus enclosed is said to remain sound for a long time, but further particulars as to the kinds of fruit preserved, &c., are not given.

THE INDOOR GARDEN.

THE COCA PLANT.

(ERYTHROXYLON COCA.)

Considerable attention has recently been directed to the stimulating and other properties possessed by this plant, living specimens of which may now be seen at Kew, in the Royal Botanic Gardens, Regent's Park, and also in some of the best London nurseries, where it forms a low shrub from 3 ft. to 4 ft. in height. So far as we can discover, it is a very variable plant, some of the specimens being much branched and the leaves very different from each other both in size and shape. Our illustration represents a branchlet and was taken from a plant which recently flowered in the Economic House at Kew; it is precisely the same in habit as specimens of the wild plant in the Kew Herbarium. Coca leaves have long been, and still are, extensively used as a masticatory by the inhabitants of the Pacific side of South America. In Peru, more especially, the custom of chewing the leaves of this plant is said to be of great antiquity; indeed, it is said to have originated with the Incas, and at the present time is common through New Grenada, Quito, and Peru, and also on the banks of the Rio Negro. The Indians always carry with them a little bag of the dried leaves and a gourd containing finely powdered lime, which is mixed with the leaf before chewing. Used in moderation, Coca is said to pleasingly excite the imagination, and it also powerfully stimulates the nervous system. In illustration of this, Dr. Spruce remarks that an Indian with a supply of his favourite Coca leaf or Spadic, will travel two or three days without food and without showing any desire for sleep. Among recent contributions to the history and effects of this plant we may allude to a paper read before the April meeting of the Edinburgh Botanical Society, from which it appears that without doubt the leaves of the Coca, when rightly prepared and used discreetly, possess the effects ascribed to them by all travellers in Peru since Pöppig was there in 1827, but that their effects are not always precisely the same on different individuals. From experiments conducted by Sir R. Christison, the author of the paper above cited, and those of fourteen other gentlemen who undertook to try the plant at his request, the following conclusions have been arrived at:—(1) That taken in quantities of two drachms by healthy persons it has no injurious, unpleasant, or suspicious effect whatever; (2) that in a very few cases this dose of an inferior sample had no effect at all; (3) that in by much the greater number of instances, and with a fine sample in every case, extreme fatigue was removed and prevented from returning, and that no doubt can exist that in such persons its restorative and preventive powers will render protracted exercise easy, without any subsequent harm, so far as the restorative is concerned; (4) that it does not in the end impair the appetite or digestion, although hunger, even after long fasting, is taken away for an hour or two; (5) that the use of it probably does not agree with more than a very moderate use of alcoholic stimulants; at the same time the paper avoided all reference to the possible medicinal uses of this plant. Similar conclusions have also been arrived at by Professor Bouchardat, of Paris, who considers that its services in therapeutics have been most valuable—almost equal to those of Cinchona, and that as a nervous and muscular stimulant it ranks with tea and coffee. On the other hand, evidence is not wanting to show that its effects (like those of Tobacco, Opium, Hemp-resin, Gunjah or Bhang, alcohol, and other vegetable stimulants) are certainly highly injurious when used habitually or in excess. A confirmed conquero, as an habitual chewer is termed, is said to be invariably known by his haggard look, gloomy and solitary habit, listless inability and disinclination for any active employment. Its use is regarded by Europeans as befitting only the Indians; nevertheless, many whites are addicted to it. Dr. Weddell, who inquired very carefully into its effects on the constitution, states as the result of his observation the opinion that its habitual use acts on Europeans more prejudicially than on the Indians accustomed to it from early years; and in some cases attributed to its abuse a peculiar aberration of intellect, characterised by hallucinations. Dr. Mantegazza fully confirms the statements of Pöppig, and carefully describes its effects, stating the result of intemperance in its use to be frequently confirmed idiocy. The principle to which the effects of the Coca leaf is due has been named Cocaine, but much remains yet to be done before we can speak with any precision as to the properties and uses of this comparatively modern introduction to the Pharmacopœia. The plant is easily cultivated in an ordinary plant stove in a compost of fresh fibrous loam, leaf-mould, and sand; when growing it requires copious supplies of water at the root, and frequent syringings with tepid water keep down insect-pests. Cuttings of both stem and root may be employed for purposes of propagation. There are about seventy other species of Erythroxylon, some of which have stimulating qualities, while others furnish a tonic bark somewhat resembling that of Cinchona. The bark of one species—E. tuberosum—supplies a reddish dye. The majority of the species are natives of South America and the West Indies, but others are found in Madagascar and the Mauritius. In nearly all the species a distinct pale band runs up the centre of the back of the leaf, as shown in our engraving; indeed, in some descriptions of the leaf of the Coca plant, we find it stated that two veins, in addition to the midrib, run parallel to the margin, as in Melastomads. B.



The Coca Plant.—Leaf natural size, single flower, and ovary enlarged.

THE GLEICHENIAS.

These constitute one of the most beautiful groups belonging to the whole family of Ferns; the different species of which the genus consists are divided into two tolerably distinct sections, namely, the Gleichenias properly so called, in which the minor segments of the fronds or pinnules are orbicular or roundish; and the Mertensia group, the growth of which is more erect and the pinnules linear. As regards culture these two sections differ but little, if we except temperature; the true Gleichenias, being natives of Australia, New Caledonia, New Zealand, and Tasmania, will luxuriate in a cool plant stove; while the Mertensia group, which consists of natives of Ceylon, Penang, Malacca, Hong Kong, Assam, Jamaica, and Trinidad, require a warm stove. Of Gleichenias, some twenty or thirty are named in Hooker and Baker's "Synopsis Filicum," but for decorative or exhibition purposes the kinds alluded to below are the best. None of them should be sown in deep pots, as the fronds rise from slender rhizomes that creep near the surface. The compost in which they succeed best is one capable of retaining its porosity for a long time, as, when once established, they do not like being disturbed. Fibrous peat, broken up into pieces the size of an egg, forms a good basis, and to this may be added about one-fifth of coarse sand-stone grit or well-washed road or river sand. The ordinary white sand, so generally recommended and used for Ferns and other plants, is too fine for the purpose, and allows the soil to clog in a comparatively short time after the plants are re-potted. To the above a little good fibrous peat may be added in the case of robust growing kinds, and especial care must be taken to drain the pots or pans employed in such a way that water cannot stagnate in the compost. Like all Ferns, Gleichenias require a copious supply of moisture, both at the root and in the atmosphere, especially when growing, but the soil, as I have said, must never be permitted to become water-logged. Insect-pests must, as a matter of course, be carefully guarded against. Green fly is apt to appear on the young fronds in the spring, and brown and white scale often do great damage unless kept from spreading, as it is almost an impossibility to eradicate them from large specimens when once they obtain a footing.

I.—Gleichenias, properly so called.

Pinnules round, arranged closely in double or bead-like rows, and often pouched or concave below.

Gleichenia alpina.—This is a compact Tasmanian species, the fronds of which rarely exceed 12 in. in height; the divisions of the frond are about an inch in length, the minor divisions being round and not pouched below, and of a fresh bright green colour above. When well grown it forms an attractive little specimen, which succeeds perfectly in a cool Fernery or pit.

G. circinata.—This is generally grown in gardens under the name of G. microphylla; it produces elegantly-curved fronds of a dense green colour, the minor segments being roundish in outline and not concave below. Although, in general appearance, it somewhat resembles the last, it is much more robust and larger in all its parts. This is a native of New South Wales and Tasmania, and is one of the best known of all Gleichenias. A very distinct variety of this plant is not unfrequently met with in good gardens under the name of G. circinata glauca, which, in addition to being much more luxuriant in growth than the type, has thicker fronds, and the young growths and the under surface of the pinnules have a distinct glaucous hue. It is generally imported from New Zealand, and is well worth culture as one of the most robust and beautiful of the group to which it belongs.

G. dicarpa.—Of this the annexed illustration (p. 447) gives an excellent idea; it is one of the most elegant of all Gleichenias, and a kind that may be grown successfully in a warm greenhouse. As in many other species, its long fronds branch dichotomously, and their minor segments are of a bright dense green colour, the under surfaces being pouched or concave. The slender stipes are densely hairy, but the other parts of the fronds are smooth. Good specimens of it measure from 2 ft. to 4 ft. in height, and about a yard in diameter. It is a Tasmanian species, and being a good grower and one of the best of the section to which it belongs, it well deserves culture.

G. hecistophylla.—This attractive New Zealand species resembles the last in general habit of growth, but the divisions of the fronds are larger. The stipes and rachis are densely covered with short brown hairs, the remaining portion of the fronds being smooth and of a dense but bright green tint. When grown in a shallow pan of fresh open compost, in a temperate and humid atmosphere, this makes a handsome specimen, either for ordinary decorative purposes or for exhibition.

G. rupestris.—Of this, perhaps the rarest of all cultivated species, the best specimen I ever saw was one grown by Mr. Petch at Manley Hall, near Manchester; it was about 4 ft. in height, and nearly a yard in diameter. Like the others, it is evergreen, and the stems are of a dull reddish-purple colour, the minor divisions of the fronds being bright green above and glaucous beneath, but not concave or pouched. It is a native of New South Wales, and when better known will doubtless become a general favourite with all growers of choice Ferns.

G. semivestita.—This comes from New Caledonia, and requires a stove temperature, if success in its culture be the object aimed at. Although generally considered by cultivators to be a species, it is, without doubt, only a distinct form of G. circinata. Its stems and branches are covered with short red or brownish hairs, and the minor divisions or pinnæ are of a dense green colour. When well grown it makes a very handsome specimen, fully 4 ft. in height, and nearly as much in diameter. Its fronds, in a cut state, are very useful for many purposes, and if well-developed pieces be selected and immersed in water for half-an-hour or so before they are associated with flowers or other Ferns, they will be found to remain fresh for a day or even longer.

G. Speluncæ.—Like the last this is only a distinct form of G. circinata, which must be regarded as perhaps the most ubiquitous and variable plant in the whole genus to which it belongs. The fronds are broader than those of the type, of a pale green colour above, and most distinctly glaucous, indeed, almost silvery, beneath; the pinnæ are not pouched like those of G. dicarpa and others. Well-grown plants of this are very handsome and effective, especially when contrasted with more sombre-tinted kinds. It is a native of New South Wales and also of Tasmania. It is now common in gardens and for all decorative purposes; it is one of the best and most distinct in the whole section in which it is placed.

II.—False Gleichenias or Mertensias.

Pinnules linear, pectinate or comb-like in arrangement, and often serrate.

G. Cunninghamii.—This beautiful New Zealand species is at present rare in cultivation. It is upright in habit, and its fan-like fronds, which often reach from 3 ft. to 4 ft. in height, are peculiarly bright green above and distinctly glaucous beneath. The young growths are covered with large brown scales, which form quite a distinctive feature. It grows well under ordinary treatment in a warm greenhouse or conservatory, and when more plentiful cannot fail to be a favourite.

G. dichotoma.—This is a very widely distributed species, and one which is very variable in habit. It is found throughout the tropical and sub-tropical regions of the southern hemisphere, and is one of the most common species in cultivation. Its long branching fronds are borne on a slender rhizome, the ultimate segments of which are from 8 in. to 12 in. in length, and divided into regular comb-like or pinnate divisions. The fronds are of a soft and pleasing shade of green above and glaucous beneath. When well grown in a cool stove temperature it makes a handsome specimen, either for ordinary decorative purposes or for exhibition. It is a Fern which should be in every good collection.

G. flabellata.—This robust, erect-growing plant, from Australia and Tasmania, is of easy culture and noble proportions. Specimens of it, 5 ft. in height and 10 ft. or even more in diameter, are not uncommon, and few cool-growing evergreen Ferns equal it in freshness and beauty. It succeeds well in a shallow, well-drained pot or tub of fibrous loam, peat, and coarse sand, and requires a copious supply of moisture. It is one of the hardiest species in the whole genus, fine specimens of it being known to withstand 2° or 3° of frost without sustaining any injury. It is, however, unadvisable to allow the temperature to fall so low if it can be avoided. The fronds have elegant fan-like divisions, of a deep green colour, and are invaluable for cutting, as they remain fresh in water for several days.

G. furcata.—This comparatively little known West Indian plant grows 2 ft. or 3 ft. in height, and has fronds which branch dichotomously, as is generally the case with other plants of this group. The pinnæ are linear, and rather deeply serrated, of a soft green colour, and slightly downy. It is a plant which requires a warm stove temperature and a fresh, well-drained compost.

G. pectinata.—This appears to differ but little from G. dichotoma; it is, however, less robust and more elegant in habit, and the fronds are not so finely divided, and they are more distinctly glaucous beneath.

Many other species of Gleichenia are known through books and herbaria, but the kinds just named consist of the most beautiful of those which are grown in gardens, and they are amply sufficient for the most complete general collection of decorative Ferns. B.

CULTURE OF AMARYLLIDS.

These are bulbous plants, some of which are evergreen, others shed their leaves in winter, the principal difference in their culture being that the evergreen kinds, although requiring to be kept much drier at the roots during the winter season, than the others must not be allowed ever to become quite dry —a condition necessary with those that are deciduous. Of the first species introduced, a few are from the Cape of Good Hope and the West Indies, but the greater number are indigenous to Brazil and the adjacent countries. From these have sprung the present race of splendid hybrids, possessing a free habit of blooming, and producing large and truly gorgeous flowers, wherein the striping and blending of soft and intensely deep colours are combined in a way that is not surpassed by any plants in cultivation. They possess the double merits of being easily grown, and not getting too large for those who have not the convenience of large stoves, which are required for the successful cultivation of some varieties. They succeed well in good fibrous loam of a strong nature, with just as much sand added as will ensure its not getting sour and impervious to the plentiful supply of water they require during growth. There is one thing in their management that those who essay their culture will do well to bear in mind—that they do not like their roots disturbed; this especially applies to the evergreen kinds. This is the less necessary, as they do not need a great deal of pot-room, always succeeding best when the roots have well filled the soil; at the same time this must not be carried too far by allowing them to starve for want of sufficient root-space, or the flowers they produce will not be so numerous or so fine, neither will they increase by throwing off the usual quantity of offsets. Some who have written upon the cultivation of Amaryllids have advised their being grown in a mixture of peat and loam, but my experience has always been to the effect that anything in the shape of peat or light vegetable mould is fatal to their well-being. They can be raised easily from seed, and those who take an interest in hybridising have an ample field before them in which to obtain new varieties. When the seeds are ripe they should be sown in well-drained pans filled with good yellow loam, to which has been added as much sand as will keep the soil in a condition that the water can pass through it; cover the seeds slightly, and place the pans in an intermediate temperature of 60° in the night, and proportionately higher in the daytime; give as much water as will keep the soil moist. When the young plants make their appearance, allow them plenty of light; as the days lengthen, give 5° more heat in the night and 10° or 15° in the day; let them have enough water, and admit air, as they will not make satisfactory progress if too much confined. It is not well to disturb them from the seed-pans until they have made several leaves and the bulbs have begun to form, which condition they will attain towards the close of summer, if all have gone well with them now, as the object is to keep them in growth during the summer and winter for a couple of years, in order to save time. They should be placed singly in small pots, well drained, and the soil pressed quite solid about the roots. They generally succeed better when the greater portion of the bulb is covered in the soil than when potted higher above it. This applies to all their stages of growth. At once replace them at the coolest end of the stove, and keep them through the autumn and winter at 55° in the night and a little more in the day, attending to them regularly with water. As solar heat increases, raise the temperature proportionately, and as soon as the soil is well filled with roots, shift them into 4-in. or 5-in. pots, draining sufficiently and making the soil quite solid as in the first potting. Grow them on without delay by constant heat and moisture, giving them plenty of light all through the summer and autumn; winter them in a similar temperature; in spring move them into 6-in. pots, and treat them in every way as in the past summers; in the autumn place them where they will be under the ripening influence of all the sun and air possible, and gradually withhold water; through the winter place them on an airy shelf in a temperature of 55°, with just enough water to prevent the leaves from flagging; in spring give more heat and moisture. If the bulbs have attained the strength that they should have from the treatment prescribed, most of them will flower; after which give those that appear to require it 7-in. pots, and place them through the summer under similar conditions to promote growth as hitherto recommended, and in the autumn and winter repeat the ripening and resting processes, but never attempt to keep them too cool in winter; through this cause innumerable quantities of these fine plants have been lost. In their native country the only change they are subject to is from hot and damp in their growing season to equally hot and dry during the period of rest; consequently they will not bear to be kept too cold in the winter. For a time they will bear a lower temperature than that above given for their season of rest, but there is always danger of their decaying when so treated, and it also impairs their strength. In succeeding summers give small shifts when it is evident that they need more room, but not otherwise; as they get strong they will push offsets that can be taken off and grown on singly, managing them as recommended for plants raised from seed. The above treatment of course applies to seedlings that have been raised from evergreen kinds, and are similar in habit to the parents. To the deciduous kinds no water must be given from the time when the growth is fully matured and ripened up in the autumn, until they are to be started in spring; in other respects the treatment required is the same.

Gleichenia dicarpa.

Both the evergreen and deciduous kinds want a plentiful supply of water whilst they are making growth; any stint at this stage will be sure to impair their strength and inflict serious injury. They will also be benefited at this time by a frequent supply of manure-water not too strong. Within the last few years this splendid genus of plants has received by many plant growers the attention it deserves, and has emerged from a state of comparative neglect to which it seems unaccountable it should ever have been consigned; yet such undoubtedly is the case, for there is ample evidence to prove that Amaryllids were much more generally grown half a century ago than they are at present.

Aphides often attack the young leaves and unexpanded flowers; they can be destroyed by fumigating with tobacco, or by sponging; the form of the leaves is such as to favour their being thus easily removed. Thrips and red spider will sometimes make their appearance if not syringed occasionally; for these lay the plants on their sides, and syringe freely with clean water. Scale and mealy bug will also live upon them; the best remedy for these is sponging, getting down to the base of the leaves, where the insects harbour.

Thomas Baines.

Daphne Cneorum Forced.—This may with advantage be added to the list of hardy plants suitable for forcing. Its adaptability for that purpose has been well exemplified this season in the Kingston Nurseries, where, according to the "Gardeners' Magazine," it has been forced in considerable numbers for indoor decoration. A remarkably fine example of this Daphne formed part of a group of old-fashioned flowers exhibited at the last meeting of the Royal Botanic Society, and was of itself sufficient to show that under a proper course of culture it makes a charming pot-plant. To ensure its flowering satisfactorily when forced it is simply necessary to pot up the plants in the autumn and plunge them in a bed of coal-ashes out-of-doors, where they can remain until the flower-buds are formed, and then to remove them to a temperature of about 65°. The flowers, it may be added, are delightfully fragrant, and when developed under glass are of a much more pleasing shade of pink than those produced in the open borders.

Saving Cineraria Seeds.—If a reputation for a superb strain be wanted, save seeds from named sorts only, of good habit and distinct colours. Avoid windmill-petaled kinds. To get up stock, plant the old and cut-down plants out-of-doors behind a north wall in June, and water well during the summer. They will grow like weeds; in August take offsets from them; pot them in 4-in. pots, and as soon as they are well rooted, but before they get pot-bound, shift them again into 9-in. and 10-in. pots. Keep them cool during the winter, and do not pinch them unless they show flower just after potting. By May and June they will be in full flower, but not before, if they have been kept cool enough all the winter, and it is undesirable to have them in flower before that time, as there is then less chance of their seeding well. No artificial fertilization is necessary, but keep them near the light; give plenty of air, water liberally, and be careful to keep green fly in check by means of frequent and gentle fumigations before the plants come into flower. Steadily grown, vigorous plants are, however, little troubled with such pests. When the flowers fade, and show downy Thistle-like tops, pick them off and save them. Both before and after they come into flower, Cinerarias are much benefited by frequent waterings of weak liquid manure, which do much towards producing a good heavy sample of seed.—Chef.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Wigandia latifolia.—This is a showy plant in conservatories at this time of the year. It produces fine heads of bloom of a beautiful mauve colour, the individual flowers having light centres, and measuring nearly 2 in. across; they are also sweet-scented. The plants, to bloom well, require to be at least one year old.—R. H. B.

Azalea mollis from Seed.—This lovely spring-blooming plant seeds freely and every batch of seedlings contains many varieties, the principal variation from the type being in colour, the prevailing tints being yellow, orange, and rose. Messrs. Ker & Co., of Liverpool, have raised some 4000 or 5000 seedlings of this Azalea, and of these some shown at the Manchester Exhibition the other day were much admired. Seedlings are raised with but little trouble, and apart from the charm of variety thus obtainable, the plants may be forced or retarded as desired, and they always flower freely.—B.

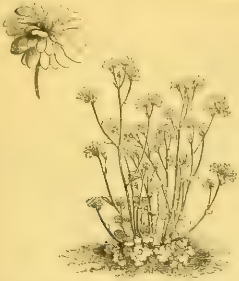
Heating by Lamps or Candles.—We have seen lamps used to keep frost out of small greenhouses, and candles have also been employed. The effects of both are increased by using metal reflectors above the flame. This prevents the heat from passing through the roof in a straight line, and almost doubles the heating power.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

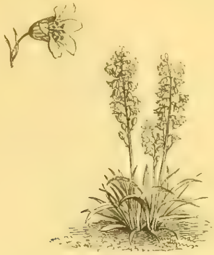
Notwithstanding the prolonged cold winds, so many "daughters of the year" appeared during the past week that we can barely allude to them by name. The finest effects we have noticed during the week were afforded by the Hooped Petticoat Narcissus, especially the slender-leaved and dwarf form, by Veitch's Primrose, unfortunately named P. cortusoides amœna, being wholly distinct, horticulturally from P. cortusoides. This, seen in established groups, in slightly sheltered positions in the open air, is the handsomest Primrose yet introduced; by Phlox reptans, masses of which are very brilliant seen at a distance; by the drooping buds of the Snowdrop Anemone (A. sylvestris); by the handsome golden buttons of the showy double Buttercup (Ranunculus speciosus); by some early Irises (hybrids between I. olbiensis and I. pumila, raised in Ware's nursery); by the massive flowers of the double yellow Tulip; and by the variously-coloured forms of the Wood Hyacinth (Scilla nutans). The following plants were noted early in the week:—Globularia nudicaulis, Viola canadensis, Orchis mascula, Anemone sylvestris, Othonna cheirifolia, Pæonia tenuifolia, Iberis correæfolia, Euphorbia Cyparissias, Aquilegia glandulosa, Alyssum atlanticum, Erysimum ochroleucum, Valeriana montana, Ranunculus speciosus, Geranium tuberosum, Geranium phæum, Dodecatheon Jeffreyanum, Iris nudicaulis, I. germanica, I. olbiensis, I. florentina, Tulipa Celsiana, Saxifraga granulata fl. pl., Phlox procumbens, Iris tuberosa, Veronica repens, Viola pedata, Stylophorum diphyllum, Pyrethrum Tchihatchewi, Polemonium reptans, Primula Monroi, Vesicaria utriculata, Cheiranthus, Veronica prostrata, Primula viscosa, Narcissus tenuior, Scilla campanulata, Lychnis alpina, Coronilla minima, Lamium Orvala, Veronica chamædrys, Narcissus biflorus, Narcissus dubius, Centranthus ruber, Saxifraga controversa, Saxifraga Geum, Saxifraga elegans, Ranunculus gramineus, Armeria vulgaris, Aquilegia vulgaris, Symphytum officinale, Iris attica, Lunaria biennis, Collinsia verna, Lilium Thompsonianum, Fritillaria pyrenaica, and Narcissus triandrus.

Mirror-globes in Gardens.—There is one offensive feature of Continental gardens, the Globe-mirror, concerning which we used to once cherish the hope that it would never be introduced to English gardens for our disquiet. We regretted, however, to see lately a very large one in the new Cannon Hill Park, at Birmingham. Such an object may perhaps amuse children; but we believe we express the sentiments of all lovers of English gardens who have been unfortunate enough to witness the object in question, when we say that a mirrored globe is sufficient to spoil the aspect of the poorest suburban tea-garden.

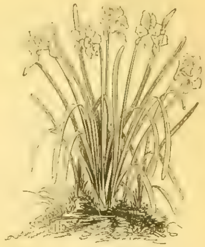
The Influence of Light upon the Colours of Flowers.—The influence of light upon the colours of flowers has been further investigated by M. Askenasy, who has described his results in the "Botanische Zeitung." It was found that Tulipa Gesneriana gave in darkness the same flowers as in light, and the flowers of the plants grown in darkness were in no wise altered when they were afterwards brought to the light, and the etiolated stems and leaves became green. On the other hand, Hyacinthus orientalis showed the influence of light in two ways; first, the light accelerated the development of the flowers, about fourteen days; then the flowers which grew in the dark were not indeed colourless, but the intensity of the colour was less, and its distribution was different from that in normal flowers. If the upper part of a cluster of flowers grown in darkness were cut off and exposed to light, there was, even after one day's action, a decided increase in the intensity of the colour, and in three days the flowers were nearly as deeply coloured as the normal flowers. Scilla campanulata developed in the dark normal flowers, in which the blue colour of the corolla was somewhat weaker than the uncovered specimens, while the reddish colour of the inflorescence of the normal plants was absent in the darkened ones. Pulmonaria officinalis, on the other hand, developed its flowers in darkness from the flower-buds quite normally; and also in the darkness the change of colour proper to this flower passed from red to blue, but the flowers that were developed later were more weakly coloured. The experiments here described show that many flowers need light to acquire their normal coloration, while others can dispense with it. Wherein lies the ground of this difference does not yet appear, and numerous further experiments will be necessary before the phenomena can be reduced to order.



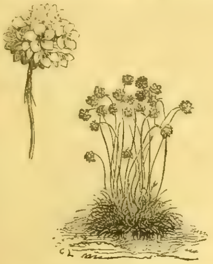
Double-flowered Meadow Saxifrage
(Saxifraga granulata var. flore-pleno).



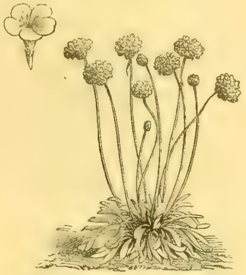
Bell-flowered Scilla (Scilla campanulata).



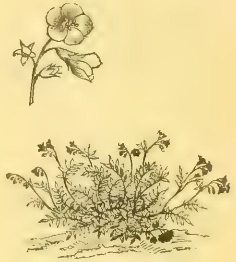
Twin-flowered Narcissus.
(Narcissus biflorus).



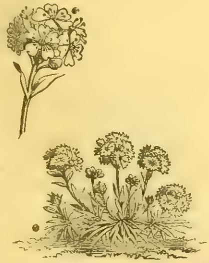
Common Thrift (Statice Armeria).



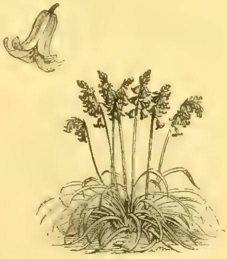
Large-flowered Thrift (Statice pseudo-Armeria).



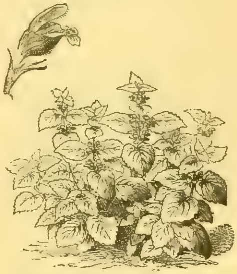
Creeping Polemonium
(Polemonium reptans).



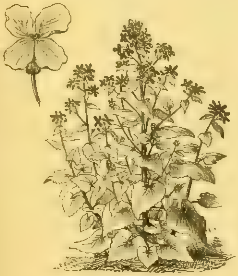
Alpine Lychnis (Lychnis alpina).



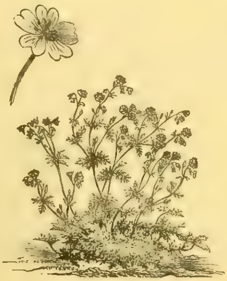
Wood Hyacinth (Scilla nutans).



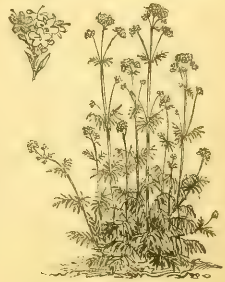
Red Dead Nettle (Lamium Orvala).



Honesty (Lunaria biennis).



Geranium tuberosum.



Wood Valerian
(Valeriana officinalis).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

TREES AND SHRUBS.

THE HOLLY IN BERRY.

Many seem to have taken an unusual interest of late in berry-bearing Aucubas, and I have nothing to say against them as new additions to our berry-bearing shrubs; but they have always struck me as being inferior in appearance to a handsomely-shaped Holly tree laden with its bright scarlet fruit. The Holly is often used for planting under the shade of other trees, where it grows better than most other shrubs; it is then an evergreen and nothing more, for it does not bear fruit in the shade; but a Holly grown on the open lawn, tall, pyramidal, dense in foliage, and covered with bright fruit, is unmatched as an ornamental berry-bearing tree. For the last few years one of the most conspicuous objects in our grounds during the winter months has been a Holly tree. Hollies are usually raised from seed, and probably they vary in habit and fruitfulness, like the Horse Chestnut and similar trees; and probably the tree in question is a more than usually fruitful subject, for, though something must be allowed for a check which it received in lifting it on one occasion, it always was a freer bearer than most of its neighbours, and is generally so completely covered with fruit as to be a most conspicuous object a long way off. I think the case worth mentioning, as showing what might be accomplished by selecting seed for propagation from the most fruitful trees—presuming that they vary in this respect—and that in pleasure grounds it is well worth the trouble to give the Holly a little more attention than it usually receives. Seedling trees, I believe, make the best specimens, and if a good-shaped Holly be planted on the open lawn, it will almost invariably throw up one or two straight leaders, and assume a perfectly pyramidal form without any assistance from the knife at all, though a straggling shoot may be removed if needful. I have had opportunities of seeing the Holly grown in this way, and have seldom seen it otherwise than perfectly symmetrical in shape and dense in habit from bottom to top. Then as to berry-bearing, it is like other fruit trees: root-prune occasionally, and if the tree be at all fertile, it will bear profusely. Of course, it is not suggested that this trouble should be taken with all the Holly trees in the garden, but only with a few specimens here and there. Every two or three years cut a trench round them and shorten their roots; this is best done in May or August, and it is more necessary in deep and strong soils than in those of a light character; indeed, in retentive soils, which the Holly does not like, root-pruning is almost essential in order to secure a crop of berries. In ordinary cases, however, severe root-pruning, such as is sometimes practised with impunity on fruit trees, is not to be recommended. Hollies will bear such treatment if done at the proper time, and it will make them fruitful bearers, as I know by experience; but the shoots often die back at their points for a year or two, and make poor and scanty foliage, which deprives them of half their beauty. In root-pruning, therefore, only cut in their extreme points a little, also any strong tap roots that are pushing into the subsoil. C.

DEUTZIAS FOR SMALL GARDENS.

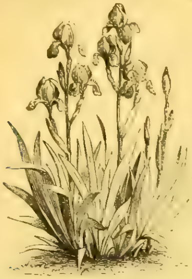
For small gardens or the amateur's greenhouse, one of the most beautiful plants now in flower is Deutzia gracilis, a slender, twiggy, hardy, deciduous shrub. It makes a lovely pot plant for the cool greenhouse, and is very suitable for window culture. It is largely grown for Covent Garden Market, where large quantities of its flowers can be seen daily during the month of April. This plant is related to the Philadelphus of English gardens, of which P. coronarius, or the Mock Orange, is one of the sweetest and most useful shrubs we possess. All the Deutzias may be grafted upon the Philadelphus, but this is only necessary where fine plants are required for growing on cold uncongenial soils. The various species in cultivation, and the mode of treating them are as follows:—Deutzia scabra (Rough-leaved Deutzia) is a native of Japan; a hardy deciduous shrub, growing 6 ft. high, and blooming freely during May and June. It is not very particular as to the nature of the soil; it will flourish where a Currant tree will grow. D. sanguinea, which is useful for a wall or trellis, blooms in April, flowers red and very attractive. D. corymbosa has white flowers in corymbs; a shrub, grows from 3 ft. to 4 ft. high. Native of Kamaon. D. Brunoniana is a shrub 5 ft. high; flowers, white. Native of Kamaon. D. staminea.—Flowers, white, sweet-scented; height, from 3 ft. to 4 ft. Native of Nepaul. D. gracilis (the Slender Deutzia) of Japan.—White; flowers in April. This is the dwarfest and neatest-habited of all, and the most generally useful. If the Deutzia be well grown the previous season, it will be sure to bloom abundantly in April, and earlier in a warm greenhouse temperature. When it has ceased flowering, cut away all the shoots that have bloomed. Keep the plants in a shady part of the greenhouse, and syringe them frequently to encourage a vigorous growth. Give plenty of air, and use the syringe freely till the middle of May, about which time the pots may be plunged in ashes in the open ground. In June slips of the new growth, taken off with a heel, strike rapidly in sand under a bell-glass, and when struck should be placed in small-sized pots for the winter, and be shifted as soon as they begin to grow in the spring. The only point of importance in their culture is always to make sure that the wood is well ripened in autumn. Water must be withheld as the growing season declines. Let the wood be of a fine brown colour before winter sets in, and the spring bloom will be satisfactory. If any plants be wintered while the wood is green they will either flower very thinly or not at all. All the Deutzias may be propagated in the same way as Currant and Gooseberry trees, by inserting ripe shoots round a large flower-pot in the autumn, and wintering them in a cool house or pit. After allowing them to grow one season without being disturbed, they may be planted separately into blooming pots, and the wood ripened out-of-doors in a warm situation, in the same manner as larger specimens are treated. D. gracilis and D. scabra are the most useful for the conservatory, as they can be forced with very little heat, and may be propagated to any extent with the least trouble by any amateur. Another very easy way to propagate them is by taking a good strong plant (after it has discontinued blooming, all the wood that has bloomed been cut out, and the new growth commenced), and turning it out of the pot about the middle of June, and planting it in the open garden. About the end of September, lift the plant, and split it up; place the three or four slips in a pot, as you would young Geraniums; winter in a cool greenhouse; let them have a season's growth, and in the autumn pot them off separately. They like a good soil and plenty of drainage. In summer regulate the growth of the young wood by pinching in, to cause the branches to become crowded with flowering spurs for the next season. When the growth begins to harden, withhold water, and expose the plants to the full glare of the sun, in order to ripen the wood perfectly. Success then becomes a certainty. Decumaria barbara, a hardy American shrub, belongs to the family of Mock Oranges, and is closely allied to the Deutzia. It produces flowers like those of the Lime, and is well adapted for forming a bower, the flowers being very sweet-scented, while the foliage is really beautiful. Henry Taylor.

Fencote, near Bedale.

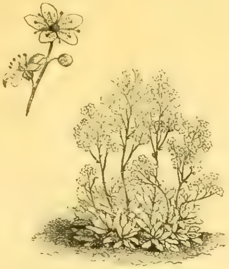
ON THE GROWTH OF THE WILLOW.

(SALIX ALBA).

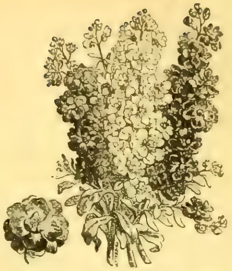
It was a saying of the celebrated eremitish contemplator and lover of solitude, as well as promoter of monastic life, St. Bernard, that he had learned more from trees than men; and no doubt the naturalist with any poetical feeling in his temperament might well echo such a sentiment. But the physiological botanist, who looks about him in the woods and on the banks of streams, may also pick up some knowledge from studying the growth of trees; and even the common Willow (Salix alba) can show some very curious instances in its mode of growth and resuscitation. As a tree, its allotted life is but short in comparison with other deciduous trees, for it soon becomes hollow, and is easily upset by winds; but, says Mr. Lees, in "Science Gossip," it has powers of resuscitation which enable it to prolong or renew existence. The propagation of the Willow is easy enough, as a branch or stick, if planted, will grow; but after becoming hollow, and appearing to be an easy prey to the tooth of time or any wind that may blow, it is enabled by a remarkable process to send down roots from above, which anchoring in the soil, give the Willow a fresh hold upon life, and its protracted existence is thus secured. A silvery feature is given to a landscape where the waving Willows by the brook-side predominate, and are agitated by the wind. Even when denuded of their leaves, the willowy brook may still be traced, and the old pollards ranged along the bank, like giants with huge distorted heads, and bent towards the earth by the force of continued gales, make a characteristic feature not to be mistaken. I have noticed numerous old Willows on the banks of the river Teme in Worcestershire, which perhaps more than any other English river is bordered with Willows in every stage of age and decay, often forming very grotesque objects. As they are all pollarded by the farmers on whose land they grow, many of them form enormous heads on which in time a humus is deposited, and Mosses accumulate; thus affording a nidus for seeds and berries to rest upon and vegetate. In this manner epiphytes arise, and it is curious to observe seedling Oaks, Hawthorns, Alders, and Hazels, and sometimes Sycamores and Ashes, besides smaller shrubs, growing upon and mixing their foliage with the old pollard Willows. An old Willow, with its family of colonists, among



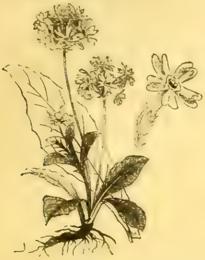
German Iris
(Iris germanica var. cœrulea).



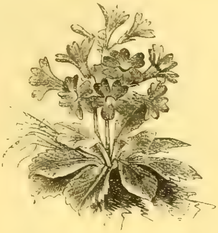
Cut-leaved London Pride
(Saxifraga umbrosa var. serratifolia).



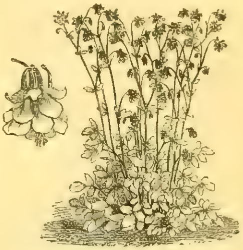
Double Wallflower (Cheiranthus
annuus grandiflorus flore-pleno).



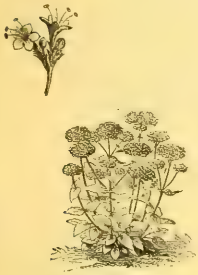
Mealy Primrose (Primula farinosa).



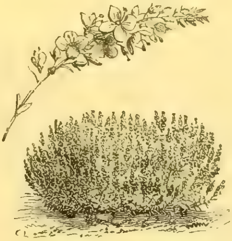
Swiss Primrose (Primula viscosa).



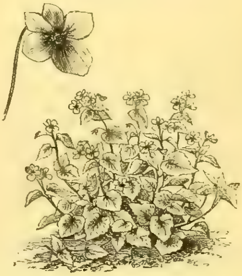
Double Columbine
(Aquilegia vulgaris flore-pleno).



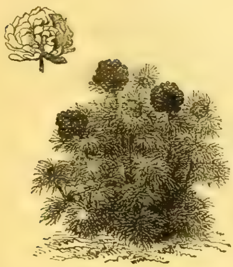
Mountain Valerian
(Valeriana montana).



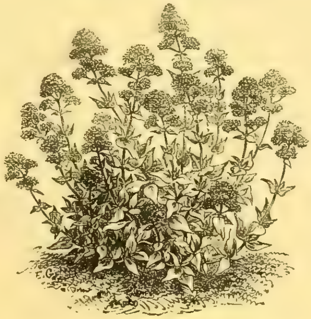
Prostrate Speedwell (Veronica prostrata).



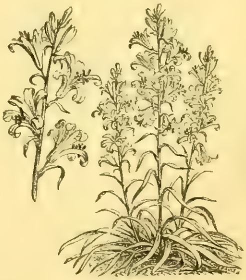
Canadian Violet (Viola canadensis).



Fennel-leaved Peony
(Pæonia tenuifolia flore-pleno).



Red Valerian (Centranthus ruber).



Thompson's Lily (Lilium Thompsonianum).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

which are often many flowering plants upon its wide-distorted head, thus makes a very curious spectacle. As the Willow grows rapidly to maturity, its duration is proportionally short, and, shattered by winds and storms, it bends in a decrepit state over the streams on whose banks it grows—"stooping as if to drink," Cowper says—and becoming hollow with a still sprouting head, is easily overthrown. Fallen Willows often form rustic bridges, useful to the wanderer in crossing streams where there is no foot-path to aid his progress. Nature gives some compensation to the Willow for its short natural life by giving it means of resuscitation in several ways, and it clings to life with remarkable energy. Even if the trunk be broken and the head blown off, if the latter only retain the slightest hold upon the tree, and in its fall be supported by a neighbour, the head produces an abundant crop of branches, continuing to flourish notwithstanding its prostration. If a tree standing upon the river-bank, close to the water, get its roots exposed by the bank being washed away, these roots become leafy, and form so many fresh stems, with a bush of verdure as the process goes on. In this way the tree becomes duplicated; the upper portion above the bank, while the lower is below it, and partly in the water. Sometimes, while the bole of a Willow has from some cause become decayed, and utterly dead, the lower part next the ground retains vitality, throwing out a maze of shoots that surround and protect the decrepitated old rotting bole. Another way in which aged Willows are resuscitated, is by their power of sending down roots from the head within the hollow bole into the soil, thus giving fresh anchorage to the old tree; and when the decayed shell at last gives way to age and time, a scion of the demolished tree is left to occupy the ground, and to take the place of its departed sire. The Willow is thus invigorated with new life, and resists for many years the wintry gales that would otherwise have overthrown it. Modern writers have taken little note of this mode of growth, though it was remarked by Evelyn, in his "Sylva," many years ago. He says:—"Trees will otherwise grow frequently out of the bole of the other; and some roots will penetrate through the whole length of the trunk, and, fastening in the very earth, they burst the including tree, as it has happened in Willows, where an Ash tree has sprung likely from some key or seed dropped upon the head of it." Evelyn's observation, however, rather applies to the roots of trees that have got fortuitously upon the heads of pollard Willows, and there vegetated, and not to the resuscitated growth of the Willow within itself, as I have here described. But Dr. Plot, in his "Natural History of Oxfordshire," has mentioned an Elm, "hollow as a drum, and decorticated at the base," which, as I have mentioned in the Willow, had "let down roots all the length of this empty case, and striking when they came to the earth from whence it derived nourishment, maintaining a flourishing top, and has till now passed for a little miracle." This curious Elm does not appear to have been noticed since Dr. Plot's time, and I fear is not now in existence. A few other trees throw down roots in this remarkable manner, but it is most obvious in the Willow.

Street Trees (see p. 435).—Allow me to refer any one interested in this really important subject to the beautiful avenues in Vevay, in Switzerland, consisting of various kinds of the Sorb or Service Tree. The brilliancy of their large scarlet fruit and the dazzling hues of their foliage are beyond description. There were two or three sorts in the avenues in question, but all were in fruit at the same time, and equally brilliant in the month of October. The clusters of white flowers, too, must be equally ornamental in the spring and summer. The foliage was abundant, and sufficient to afford a desirable shade to foot passengers.—A. Ll.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Tall Juniper.—It is stated that at Wardour Castle in Wiltshire there is a Juniper (Juniperus communis) 30 ft. high. In its wild state it rarely rises above the height of a shrub. I should be glad if any of the readers of The Garden could give me any information respecting the Juniper attaining the proportions of a tree.—T. J.

Abies Engelmannii.—In the grounds of Mr. Mercer, Bucks, we recently saw two fine specimens of the Engelmann Spruce. One was about 3 ft. high, and probably larger than Mr. Gray's at Boston, which we had supposed hitherto was the largest in cultivation. This beautiful Colorado Spruce seems well adapted to eastern coast culture, and we hope to see it become common.—"Gardeners' Monthly." [Is this tree in cultivation in England?]

Tree Roots Choking Drains.—A correspondent of a country paper says:—"A cure for this evil is coal-tar. I have had recourse to it with entire success. In using it I mixed it with sawdust to the consistency of ordinary building mortar. A layer of this was spread on the bottom of the drain; on this the drain-pipes were set, and then carefully covered all over with the tar-mortar. If the work be carefully performed, and the mortar applied in sufficient quantity—say 1½ in. thick all round—I can guarantee success."

PLATE XX.

THE RAMANAS ROSE OF JAPAN.

Drawn by H. HYDE.

With florists' Roses, provided labels do not get lost or misplaced, there is but little difficulty. If we are only sure that a particular plant is Isabella Sprunt or Maréchal Niel, we do not lose sight of that fact; but when we come to speak of Roses in their natural state as species, we are at once surrounded by difficulties. The very quality that makes the Rose so valuable to florists—its tendency to sport into new forms—is that which makes the plant so uncertain in the wild state. In the whole of Britain, according to Bentham, there are only five species of native Roses, while other botanists hesitate between nineteen and twenty species. We mention this to show that it is not surprising, when we come to examine an interesting Japanese Rose, that we should be in doubt what botanical name to give it. But first as to the Rose itself, which we met with several years ago in the garden of Mr. James Hogg, to whom it had been sent from Japan. It being quite unlike any other Rose in our garden, we were much pleased to receive in the course of a few months specimens from Mr. Hogg, and also from Mr. John Saul, of Washington—and no Roses in our little collection afford us more pleasure than these do. Those who think a Rose not worth looking at unless it is as double as a Drumhead Cabbage will hardly consider this single Rose desirable, but those who can see beauty in a plant, even if it have not double flowers, will regard it as a fine ornamental shrub. This Japanese Rose grows from 2 ft. to 3 ft. high, and with its numerous branches forms a very compact bush. Its young stems are very downy, and thickly beset with sharp but weak prickles, of very unequal size. The stems being short-jointed, the leaves are brought very closely together, and make a dense mass of foliage; the leaves are about 4 in. long, with usually seven elliptical leaflets, which are light-coloured on the under surface, being covered with a down of dense somewhat glandular hairs, and conspicuously veined; the upper surface, on the contrary, is perfectly smooth, somewhat shining, and of a very dark green; the surface is strongly marked by depressions corresponding to the veins so prominent below, making the leaves appear to be plaited; the stipules are comparatively small. Taken as a shrub, without reference to its flowers, its dense habit, and abundance and richness of its foliage, make it a most pleasing object. While other plants in the same bed have been attacked by the many insects that infest Roses, the foliage of this has passed into August without a blemish. The flowers are produced in clusters at the end of the current season's shoots on short downy stalks, and have an agreeable wild Rose fragrance. The fruit or "hip" is spherical, or somewhat depressed, about three-quarters of an inch in depth, of a fine red when ripe, and looking much like a Crab Apple. The difficulty of applying botanical names to wild Roses has been already alluded to; the present one may be found in books as Rosa rugosa, R. Fortunei, and R. Regeliana, all evidently the same thing, varying as to the tendency of the flowers to become double; of these names Rosa rugosa,

Ripe Fruit of Rosa rugosa alba (natural size).

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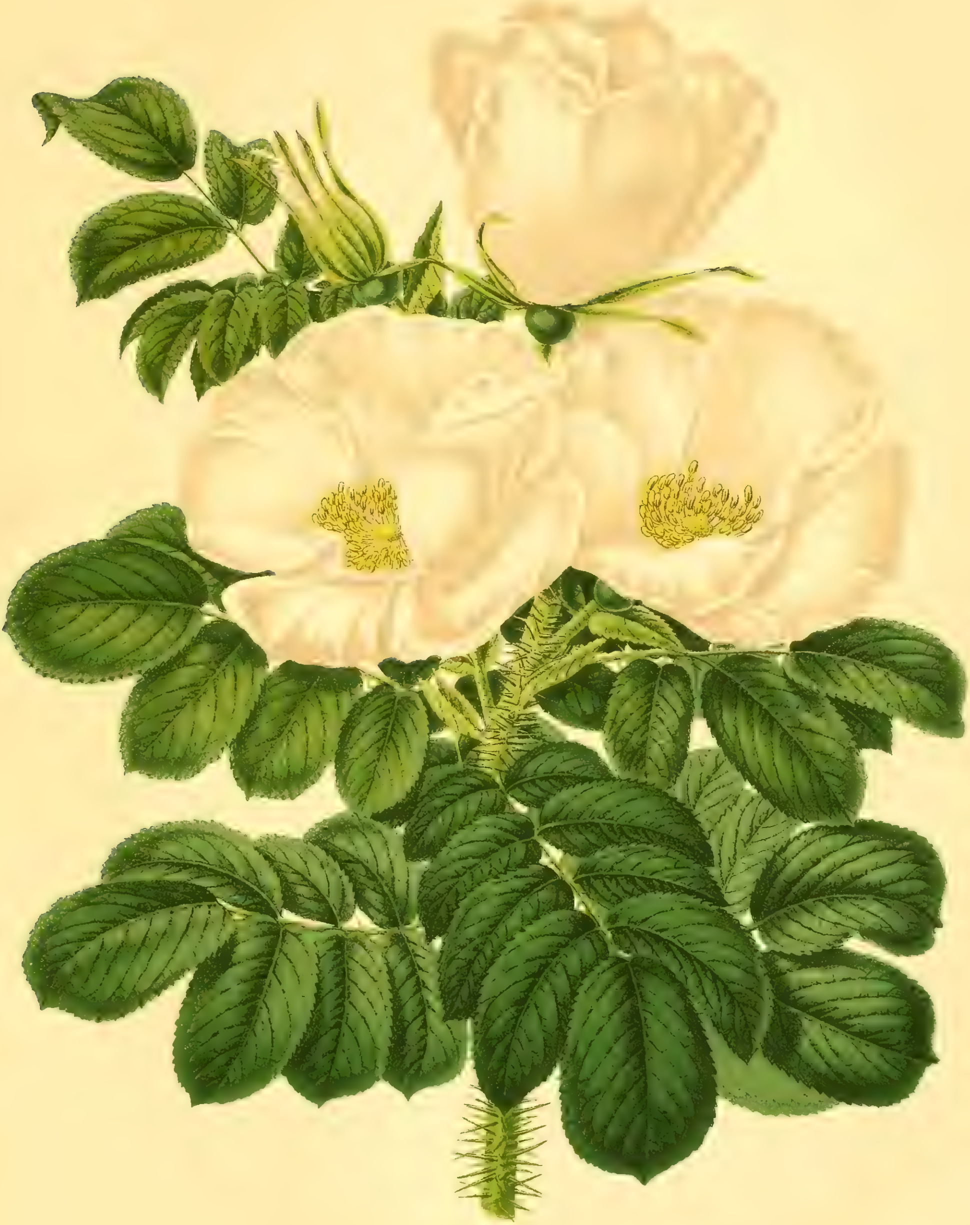


THE RAMANAS ROSE (ROSA RUGOSA ALBA)

the "rough Rose," is the oldest; but some botanists say that this is the same as the Kamtschatkan Rose, which is a doubtful species. In all this confusion we were glad to come across a good name for our Japan Rose. According to Thunberg, who first brought the plant into notice, it is called by the Japanese Ramanas, a name which will serve to designate the Rose, until botanists have satisfactorily cleared up the matter. We have both the ordinary form with white flowers, and a red-flowered one. French works mention a double variety, and our plants often produce flowers with several extra petals. This Rose is a capital subject for experiments in hybridizing; if by this means varieties could be obtained, in which the fine flowers of the Remontants and others were united with the compact habit and robust foliage, and healthy vigour of this, it would be a great step in Rose culture.—"American Agriculturist." [Our figure of this Rose was prepared from a drawing made at Mr. Ware's Hale Farm Nursery, Tottenham, where there is a good stock of it. It may also be found in other nurseries in the neighbourhood of London.]

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Flower Garden.—Those, even in the most favoured southern parts of the kingdom, who have exercised the necessary caution in not beginning to bed-out too soon, will see the advantage in having done so, for even such comparatively cold-resisting plants as Calceolarias have hitherto been better indoors than out in the beds; a commencement should, however, now be made with them, following with Pelargoniums, Verbenas, and Lobelias; the more tender subjects, such as Ageratums and Heliotropes, should be kept indoors a little longer. Even in the case of Calceolarias and similar plants, should there be an appearance of cold cutting winds, some protection should be given; the old method of sticking Laurel, Spruce, or other evergreen branches round the beds and in amongst the plants will be of much benefit, but care must be taken to insert them deeply in the ground so as to prevent wind-waving; for, should this occur, they will do more injury than good by chafing the plants. Coleuses, Iresines, and Alternantheras should by no means be trusted out until quite the end of the month or beginning of next, as the occurrence of a few hot days is no guarantee of a continuance of warm weather, and, even should no absolute frost ensue, a temperature anything approaching it would give them a check that would prevent any progress being made for some time. Annual Stocks that have been sown in small pots some time back for turning out may now be planted; but Asters had better be kept under cover another week. In the North planting should be deferred ten days later than in the South. Do not keep Dahlias too long in small pots, for if the roots be allowed to get stunted they will be long in commencing growth after being planted out, a remark which more especially applies to such as have been struck from cuttings; where necessary, these should have pots large enough to keep them growing freely until the end of the month, which is early enough for them to be planted. Large roots of these that have not yet been divided should now be cut up and put in 6-in. or 7-in. pots, according to the size of the pieces, leaving a strong shoot to each; place them in a cold pit or frame, with plenty of air. Roses should be gone over frequently, in order to destroy the Rose maggot which lies curled up in the leaves; if this pest be not killed, few of the flowers will escape being eaten by it. The trees should be regularly syringed before aphides get to a head, or these will be difficult to deal with; if they are numerous, Tobacco or Quassia water should first be used, letting it dry on, and using clean water at intervals afterwards.

Kitchen Garden.—More Peas should now be sown, and if tall kinds be used give them plenty of room, for close sowing defeats the object in view. In the case of root crops it results in a large proportion of top and a comparative deficiency of root growth. In that of Peas and Beans its effects are a preponderance of haulm with small pods. In that of the Brassica family quantities of leaves with little that is usable; however good the soil may be, crops of all kinds must have room in order to afford them a sufficiency of light and air; in rich, heavily-manured land, it is necessary to sow and plant further apart than in poor ground, as the greater the capabilities of the soil to induce vigorous growth, the more room will be requisite. Of Broad Beans another sowing may now be made, although the produce of such as are put in now, except where the land is particularly adapted for their growth, will not be equal in quantity to that of the earlier sowings. A little more Turnip seed should be sown in some moist situations, which during the hot summer months is better than a dry one. The principal crop of Beet should now be sown, and more Spinach, Lettuces, Radishes, Mustard, and Cress should also be put in; for these the soil should be well enriched, as during hot weather everything has a greater disposition to run to seed than when it is cold, and this is best prevented by using plenty of manure and giving a sufficiency of room. A little more Cabbage, Veitch's Autumn Cauliflower, and late spring Broccoli should likewise now be sown. In the case of Celery, the disposition to run to seed is much greater in some sorts than in others. By some hollow or pipy Celery is attributed to the system of cultivation pursued, such as heavy applications of manure, or the kind of manure employed; but this I believe to be a mistake. Where Celery is not subjected to unnecessary checks in transplanting, where it does not suffer through an insufficient supply of water, and where a really good variety is grown and fairly managed, even if sown as early as February, it will not show any inclination to run to seed until the end of March or the beginning of April in the following year, but where Celery is wanted until the time just mentioned, in case of any mishap a little seed should be put in now. Some of the early sown Celery should now or very soon be planted out; where the land on which it is to grow is of a dry, hot, sandy nature, much more manure will be required than where it is of a heavy, cooler character, and for the former cow manure is better than that procured from stables; where the latter is used, it is by no means necessary that it should be rotten to the extent often urged. Some of the best Celery I ever grew or saw was obtained by means of stable manure that was quite fresh, and that had not lain together sufficiently long to ferment. If manure be at hand, get the trenches for the whole crop prepared forthwith. In that case not only will the ground be better fitted to receive the plants by lying for a time before planting, but if the ridges be finished at once, they can be sown with Lettuces or Spinach, which are about the only crops that do not interfere with the growth of the Celery, and the earlier they are sown now the better. The practice of planting Celery or Broccoli alternately between rows of Peas I do not recommend, as unless space is sacrificed in planting the rows far apart, the Celery always suffers both by being shaded and also by the ground being trodden on while the Peas are gathered. If space be limited double or treble rows of Celery may be put in for the earliest crops that are likely to be used in the autumn before hard weather sets in. The plants in this case should stand a foot apart in each row, with as much space between the rows. For this arrangement the trenches should be prepared about 3 ft. or 4 ft. wide, according to the number of rows intended to be planted in them, but for Celery that is to stand the winter—except on dry soils, where double rows may be used—single rows are much the best; in the latter case not only will the produce be larger, but it will keep better, will be much easier to earth up, and will admit of being protected from frost with less difficulty, and the weight on a given space in single rows is nearly as much, for it need not be planted above 9 in. apart, and the trenches will do much better nearer together. In heavy land that is at all wet the trenches for the winter crops should not be nearly so deep as where the soil is drier. In old gardens that have been heavily manured, and especially where much leaf-mould or other vegetable matter has been annually dug in, a portion of new soil mixed with the manure will be found much better than the latter alone. A good sprinkling of salt dug in with the manure will also be found to be an improvement, as Celery, in common with other marine plants, is naturally benefited by salt. The early-sown plants of Cabbage, Cauliflowers, and Brussels Sprouts are unusually backward this season, consequent upon the protracted cold weather. A good crop of the last-named is so much dependent upon early planting that, as soon as the plants are sufficiently large to handle they should at once be put out where they are intended to be grown; the natural erect habit of this vegetable often induces its being planted too close; but, with this, as with all others, nothing is gained by an insufficiency of room, as the produce of each individual plant is thereby limited, and, should a very severe winter ensue, crowded crops are frequently completely destroyed, while those grown under conditions that afford them sufficient air and light escape with little injury. The nature, and rich or poor condition of the soil, should in all cases be considered when planting these vegetables, for, where the land has been well prepared, the plants will grow to double the size than if it be in a poor condition; place them not less than 2 ft. 6 in. apart and the same between the rows. Some of the early-sown Cauliflowers should also be planted as soon as sufficiently large, except in the most suitable soil the produce of these spring-sown plants is not nearly equal to those sown in the autumn, being deficient in the white compact heads generally seen in the latter, but they thrive much better if transplanted from the seed-bed to their allotted place when quite small, as then they receive less check in the removal. In all cases the practice I have previously recommended of putting about half-a-handful of soot and lime to each plant at the time of planting will well repay the trouble, especially on land where the Cabbage family is liable to club, for, independent of its acting as an antidote to this disease, when carefully applied, its effects as a manure are worth the cost. Lettuces should also be planted whilst small, removing them with as little breakage of the roots as possible, for on this and a rich soil with plenty of water in dry weather depend their quality and ability to grow to a full size. Do not leave anything that is intended hereafter to be planted out to remain crowded in the seed-bed; thin out all Cabbages, Cauliflowers, Broccoli, and Kale, so as to allow them to stand from 4 in. to 6 in. apart, according to the length of time that is likely to intervene before they are planted.

Fruit Garden.—Where Apricot and Cherry trees are affected with the grubs that do so much damage, these pests should be diligently destroyed by crushing them within the leaves where they take shelter. Immediately there is any appearance of aphides on Peaches or Nectarines, they should be syringed with Tobacco or Quassia water; one good washing will generally be found sufficient, if the operation be performed before the trees have become much infested. After this time they should be regularly washed twice or three times a week; where many are grown, the garden engine is much to be preferred. There is no other means of keeping the leaves healthy, and without this attention the fruit cannot be grown to anything approaching perfection. Thin a portion of the fruit, and remove superabundant shoots.

Stove and Greenhouse Ferns.

The rapid growth these are now making will necessitate a free use of the watering pot. If the drainage be effective and the soil porous, it is almost impossible to give them too much water at the root during the next few months. Tree Ferns especially require the greatest attention while forming their young fronds; in fact, during their growing state it is a safe plan to pour a quantity of water down their stems at least once a day, for if allowed to become at all dry the beauty of the plants will be spoiled for the rest of the season. Where these are confined to small tubs or have but limited root-space, manure-water will be found of the greatest assistance in keeping them in a healthy condition. It however more generally occurs that the growth of Tree Ferns is too rampant for the positions assigned them, and the best way to check this tendency to over-luxuriance is by removing any of the fronds that can be spared without detracting too much from the beauty of the plants. Ply well the syringe, so as to thoroughly moisten the floor, stages, and other available surface, both morning and evening, whenever the weather is bright and clear. Ferns delight in atmospheric moisture; but in order to secure strong firm growth, an abundance of light and air must be afforded them. If the fronds be required for cutting, the plants should be kept well up to the glass, and only receive shade during the hottest and brightest part of the day. This will thicken and harden the tender leaflets, and cause them to last double the time they would under ordinary treatment. The fronds of that old favourite for cutting purposes, Adiantum cuneatum, are much increased in value by being grown in a light airy house, as they become ripe and firm, and of a more pleasing pale green colour. Few are more highly prized for associating with flowers in table decoration; and, in order to induce them to droop gracefully, the pots containing the plants should be turned upside down and suspended for a day or two, that the fronds may be made to curve in the proper direction. Many of the Davallias are very lasting in a cut state, and are deserving of extensive cultivation for that purpose. The very elegant D. tenuifolia is perhaps the handsomest and most durable, but it is unfortunately of slow growth, and therefore, to supply fronds in quantity, a number of plants must be cultivated. D. bullata lasts longer when cut than any other Fern with which I am acquainted, and is, on account of its minute size, admirably adapted for using with Gloxinias or other short-stemmed flowers. Next to Adiantums comes the Onychium lucidum, its fine feathery appearance rendering it a particularly suitable companion to flowers in vases. This should be grown extensively where Ferns are in much request for cutting, as it bears the treatment much better than most others. A light, airy position is necessary for its successful growth, and as it is as near hardy as possible, any cool house will suit its requirements.

Hardy and Half-hardy Ferns.

Now is a good time for planting out any of the latter that have been wintered in pots, that they may make their growth in the positions assigned them, and by that means establish themselves well by the autumn, when a slight covering of dry leaves, or some other non-conducting material thrown over them will make them tolerably safe for the winter. Any re-arrangement of kinds that have outgrown their positions, or any alterations that may be thought necessary or desirable, involving the removal of plants, should be carried out at once, as most kinds transplant better now than at any other season, provided they are not too much advanced in growth. Where there is any deficiency of wild flowers in connection with the hardy Fernery, the present is the most favourable time of the whole year for remedying the defect, as they can be seen and collected with much greater ease now they are blooming than they can at any other season. In addition to wild flowers, many cultivated kinds are equally suitable for the above purpose, some of which have been previously enumerated.

Conservatories.

Heaths.—Free-growing kinds of these, as Erica Willmoreana, hyemalis, melanthera, and others of that class that were cut back some time ago, and placed in close houses or pits to induce them to break again, should now have more air, which will strengthen the young wood, and help to ward off attacks of mildew, to which the two former are very subject if kept long in a confined atmosphere. The above, with others of similar habit, do well at this season, when treated the same as Epacrises, as each requires the same kind of treatment. Where there is the convenience of a house or pit, they may with much advantage be gently syringed overhead, and have the lights closed early in the evening till their growth is more complete, after which an abundance of air is necessary both day and night to harden and mature the young wood. In their present stage, and for several months to come, shade is of the utmost importance to both Heaths and Epacrises, and where the pit or house has a suitable aspect, it will be found to agree with them much better than covering the glass. When Epacrises are exposed to bright light while their growth is young and soft, the tips of the shoots become brown and discoloured, which detracts much from their appearance, besides hardening the wood and keeping it short and stunted. Any of the above that have not yet been re-potted should at once be attended to, as the roots are just now in an active state, and require fresh soil to feed on if a vigorous growth be desired. Tough, fibry peat with a fair proportion of sharp silver sand should be used, and in potting give only a moderate shift that the same be repeated again next season, which is a more preferable course than affording them a large body of fresh soil at any one time. In potting, use the peat in a healthy moist state, and ram it as firm as possible by using a properly-prepared potting-stick for the purpose.

Deutzias that have now done blooming should have the old wood cut out, after which the plants should be placed in a close pit or frame, where they can get a little heat to encourage the growth of the young shoots now showing round their collars. If in small pots, a shift into others will be of the utmost benefit in assisting them to make strong shoots, which, if well ripened, are sure to produce a fine head of bloom. If intended for very early forcing, it is better to let a portion of the plants complete their growth without cutting out any of the wood, as then they ripen off sooner and produce their flowers earlier. Cuttings of the young half-ripe wood root freely now if placed in a little heat; and as the Deutzia is such an indispensable plant for forcing, a few should be struck every year to replace those that become starved or worn out from old age or otherwise. Deutzias may be readily divided, and succeed well in that way if grown on in a little heat till they become re-established. The double variety, D. crenata flore-pleno, although it will not force so readily as the old favourite, is nevertheless most valuable later in the season as a pot plant for conservatory decoration, and when placed out in order to show off its numerous racemes of flowers which it produces so freely up the entire length of its stems, it is exceedingly effective. This should always be cut down after it has done blooming, when it will send up fresh shoots at least 3 ft. high, and strong in proportion.

Libonia floribunda is invaluable for winter work, and cuttings should be put in at once to afford time to get them a serviceable size before the growing season is over. Where size is desired, any old plants now going out of bloom should have their shoots shortened well back, and be then placed in gentle heat to give them a start, after which they should be transferred to cold pits or frames, where they can be fully exposed during the summer whenever the weather is favourable. The secret of success in flowering these successfully is to get the young growth thoroughly ripened, which is impossible where they are treated under glass with greenhouse plants. When well grown and bloomed, and associated with the Sericographis in forming groups to furnish jardiniers, they are exceedingly effective, as the yellowish shade of their flowers shows in pleasing contrast with the bright scarlet of the above, while the growth and habit of both plants render them suitable companions. L. penrhasiensis, a cross between the Sericographis and L. floribunda, is likewise a very desirable plant to cultivate, and flowers the whole of the winter in an ordinary greenhouse temperature. This partakes more of the character of the Sericographis as regards foliage and general appearances, while the bloom is intermediate between the two parents.

Schizostylis should be largely grown wherever a supply of winter-blooming plants has to be kept up. Those who are fortunate enough to have a few plants of these ought at once to set about dividing them, for the purpose of planting them out in light rich soil, to be lifted again in the autumn; so treated, they increase rapidly, and flower with much more strength and freedom than if confined to pots during the summer, where they have an insufficiency of root-room, and perhaps frequently suffer from want of water. When this occurs, either in pots or planted out, red spider is sure to attack them and cripple their growth. To prevent this pest effecting a lodgment, the plants should be frequently syringed during dry weather, and if the ground around their roots be mulched over, it will keep them in a more uniform state as to moisture. If grown freely in this way, their leaves attain the size of small Irises, and the flowers nearly equal those of Gladiolus, which they closely resemble. For cutting, there are few things more generally useful, as they are very effective and last long in condition. If planted in warm, sheltered positions, part of the stock may remain in the ground for the above purpose, as they are quite hardy, and will thus afford a succession to those treated under glass.

Spiræas that have done blooming must be kept well supplied with water, that they may finish their growth and develop fresh crowns for blooming again next season. Where it is desirable to increase the stock of these, it may readily be done by dividing the crowns, and then re-potting them again or planting them out where they can be well supplied with water, of which they can never have too much as long as their leaves continue on them, and they are making the least growth. If planted out they should be placed in slight trenches in which they can be more readily watered during the summer, and if well attended to in this way the situation cannot well be too sunny or open. S. palmata will be much sought after for forcing as soon as it becomes more plentiful, but unfortunately it is very slow of increase, and is therefore not likely to be over-abundant for some time. Solomon's Seal, so useful for forcing purposes, should now be divided and planted out in good rich soil, where it will make fine roots for lifting and re-potting in the autumn.

Chrysanthemums.—Early-struck plants of these should be regularly shifted on as they fill their pots with roots, so as to prevent any check to their growth, otherwise they soon lose their lower leaves and become shabby. Cuttings struck now will make useful plants if liberally treated during the summer, and will be found quite large enough for ordinary purposes. Being gross feeders pot them in a rich, stiff soil, consisting of about a fifth part of sweet, rotten manure to four parts of good, fresh, fibry loam, rather inclined to adhesiveness than otherwise. In this they will make firm, short-jointed growth, and retain their leaves well down to the pot, a point of much consideration in the cultivation of these most useful plants, and without which they present but a very poor appearance. To keep them in this desirable state, they must never be allowed to suffer from want of water, and as soon as the pots get well filled with roots, liquid manure, if not too strong, will be found of the greatest assistance to them. Before plunging them out in an open border, see that they are clear of aphides, or the young growth will be crippled as it is emerging from the stems into leaf. A sunny situation suits them best, provided it be not too much exposed to the wind, in which case the plants would be liable to injury as soon as their branches were a foot long, as at that period of their growth they easily break out at the joints. Choose a firm, hard bottom on which to grow them, that it may be impenetrable to worms, which are otherwise sure to interfere considerably with the drainage, from the want of which Chrysanthemums always suffer. To shade the pots from the rays of the sun, and prevent the too rapid desiccation of roots by currents of air acting continuously on their sides, they should be well packed round with ashes, or some other close-plunging material that will answer the same purpose. Chrysanthemum frutescens deserves to be more frequently cultivated than it is, for it may be had in bloom during nearly the entire year, and if specially prepared by stopping the ends of the shoots during the summer, it may be had in fine condition through the whole of the winter, flowering freely in the ordinary temperature of a greenhouse. It has beautifully divided foliage, of a light glaucous green colour, that contrasts with its pure white flowers to the best advantage. With such plants as Salvias, Poinsettias, and others of that class, it is exceedingly effective, and will be found one of the most useful plants during the winter season. Cuttings put in now, and treated much after the manner recommended for the common Chrysanthemum, may be grown to a large size by the autumn, but as they are very susceptible of injury, they should be housed before the frosts come.

Lantanas are not nearly so much grown in pots as their merits deserve, now that there are so many fine, large, free-flowering varieties suitable for the purpose, with large Verbena-like heads of bloom. Lantanas are easily raised from seed, and any sown now and pushed on in heat will make flowering plants by the end of July. Those saved through the winter may be grown to a large size the following year, and be had in bloom the whole of the summer months.

Kalosanthes.—These will now be pushing up their flower-heads, which from their great weight require support, or they soon droop over. Keep them well up to the light to prevent them being drawn, and if confined to small pots some weak manure-water will be found useful in keeping their leaves a rich dark green colour, without which the plants lose much of their attractiveness. The present is a good time for putting in cuttings of these to grow on for another year. Place them in sandy soil, and stand them in some light dry position till they root.—J. Sheppard, *Woolverstone Park.*

Orchids.

See that all the plants are firm in the pots, and put a stick to any that may be loose, for if the plants be not firm they do not root well. The best stick for Orchids is the cane of the Bamboo, which is to be procured in bundles at a low rate at most of the leading London nurseries; it is very slow to decay, and, when decayed, it does not breed fungus like sticks made of common deal. It is, however, desirable to use as few as possible, one or two being sufficient for most plants, and these should be drawn out as soon as the plants are firmly rooted, if not required to support the top. Be careful that the growing plants in baskets and on blocks do not lack water; examine them every morning before the sun is strong, dipping those plants which require water in a tub or large flower-pot with a cemented bottom prepared for the purpose. While the plants are being dipped search for wood-lice, &c., which are almost certain to come to the surface after immersion. Let the plants drain well before hanging them up, so that no drip falls on those on the stages underneath. Never dip the plants in the tank containing the water used for watering. Do not employ the syringe as the means for watering the baskets, &c., for one can never know when they are wet or dry, and the plants that do not need water have to take their chance with others that do; besides, all miss the requisite examination and handling which is an important part of Orchid growing, and the drip from the syringed plants would be ruinous to those underneath. Attend to air and shade as previously recommended, and do not relax in any efforts to keep down insects, the present time being the most important for that operation. A syringe with a fine spray jet may now be used every morning, taking great care that the water does not get into the young growth. The plants should be syringed so as to make the spray like a heavy dew, and not until they drip. The East Indian Orchids should not be syringed more than two-thirds of the way up, leaving the middle leaves dry. Syringing, if not carefully performed, had better be confined to the back walls, underneath the stages, &c. All the houses will now bear a slight increase of temperature, but any resting plants should not be subjected to it, but placed in the coolest part of the house, or in another that is dry and cool. The temperatures for Orchids during the month of May should be:—warm house, from 70° to 75° by day, and 65° at night; intermediate or Cattleya house, from 65° to 70° by day, and 60° at night; Odontoglossum or cool house, from 60° to 65° by day, and 55° at night. The higher day temperatures are for sunny days. Keep the atmosphere of the houses sufficiently charged with moisture by throwing water under the stages, &c. The amateur having but one house should heat it as an intermediate house.—James O'Brien.

Floral Decorations for May.

Flowers, for decorative purposes, are much more numerous now than in April, the new arrivals more than compensating for the loss of Cyclamens, Roman Hyacinths, Camellias, and other valuable blooms, which have been so useful to us during the earlier months of the year. Perhaps the most noteworthy addition to our list of new plants suitable for forcing is the brilliant crimson Spiræa palmata. This and hydrocephalic Hydrangea have been making a grand display during the last few days in Covent Garden Market, while Pelargoniums of almost every shade in crimsons, pinks, mauves, and whites are "gorgeously arrayed" with blooms. Lilacs and Mock Oranges are now opening their buds, and Deutzias, Azaleas, and Rhododendrons in our shrubberies will quickly follow them. It is very fortunate that Dielytra and Solomon's Seal blossom at the same season, for it would be difficult to name any other two flowers which would produce a more elegant display in a large trumpet-shaped vase than three or four sprays of each of these plants tastefully arranged. There is a harmony of form in both having drooping blooms, and there is a contrast of colour between the respective flowers and also between the leaf of the Polygonatum and the blossom of the Dielytra.

Wistaria forms a pretty "droop" around the edge of a tall vase, but it must be wired properly, and care must be taken that its newly-cut stalk is in the water, or it quickly fades. It is difficult now to get hard, lasting fronds of Maiden-hair or of any other Fern. The young leaves of the Cow Parsnip or Hogweed, which may be found in almost every hedgerow, form an excellent substitute for Fern-fronds; and many other wild umbelliferous plants might doubtless be used with good effect. Wild Grasses are also now coming on, and have already supplied very graceful contributions to several vases.

Blue—Cineraria, Gentianella, Iris, Myosotis, Nemophila, Pansy, Wild Hyacinth.
Purple—Anemone, Cineraria, Dog Violet, Heliotrope, Iris, Lilac, Pansy, Tulip.
Mauve—Cineraria, Heath, Iris, Pansy, Tulip, Wistaria.
Pink—Azalea, Begonia, Bouvardia, Carnation, Dielytra, Fancy Pelargonium, Fuchsia, Heath, Hydrangea, Oleander, Rhodanthe, Rose, Tulip, Zonal Pelargonium.
Crimson—Bouvardia, Cydonia japonica, Fuchsia, Japan Primrose, Polyanthus, Rose, Spiræa, Wild Orchis.
Scarlet—Anemone, Bouvardia, Carnation, Euphorbia, Ranunculus, Tropæolum, Tulip, Zonal Pelargonium.
Orange—Carnation, Cowslip, Narcissus, Polyanthus, Rose, Tulip.
Yellow—Alyssum, Azalea, Broom, Calceolaria, Coronilla, Cowslip, Genista, Globe-flower, Gorse, Iris, Lachenalia, Narcissus, Polyanthus, Primrose, Rose, Tulip.
White—Alyssum, Anemone, Aponogeton, Arabis, Arum, Azalea, Begonia, Bouvardia, Carnation, Chinese Primrose, Deutzia, Eucharis, Fancy Pelargonium, Gardenia, Guelder Rose, Heath, Laurustinus, Laurel, Lilac, Lily of the Valley, Mock Orange, Myosotis, Narcissus, Pink, Rhodanthe, Snowflake, Solomon's Seal, Spiræa, Stephanotis, Tulip, Woodruff.

W. T. T.

Roses.

Roses in pots that have been forced during the winter months should not be left to take care of themselves in summer; on the contrary, they require to be carefully pruned, in order to induce them to make good young growth by the autumn. In cases in which the plants have got much drawn and unsightly, if the plants be well rooted, they may be shortened well back. Examine also the drainage, and top-dress with some good fibry loam and manure, making the surface very firm, so as to prevent evaporation. After top-dressing, select an open piece of ground, and on this make a bed of ashes to keep down worms. On this ash-bed place the plants in such a way that air can pass both through and around them. They will need no manure-water until they have thoroughly commenced their second growth; but water them when necessary with soft or pond water. If the water be hard, it should always be exposed in an open tank or tub for twenty-four hours before it is used.—H. G.

Trees and Shrubs.

All those plantations that were formed during the past season should be carefully examined to see whether any of the trees have been blown out of the perpendicular; should any have so suffered, tread them up firmly and place a turf on the leeward side. Trees that are tied to stakes should not be allowed to have the ligatures too tight, or the bark rubbed or injured. Continue the planting of evergreen trees and shrubs during the present favourable weather. Repair wood rides and roads wherever necessary. Clean out ditches and culverts that are choked up with leaves and other refuse. Make secure all hedges, gates, and stiles from the inroads of cattle. The hedges should have been trimmed or pleached by this time. Young hedges should be kept clear of weeds for the first or second year after planting by means of hoeing; pointing them over with a spade once during the summer will be found sufficient attention afterwards. Thin plantations without delay wherever they are in an overcrowded state. Mark all Oak timber for the approaching bark-stripping season. In the nursery finish the planting of deciduous subjects, and continue the planting of evergreens into nursery rows. Rearrange and regulate ornamental evergreen tree and shrub borders. Prepare the ground and begin to sow Conifer seeds whenever the land is in working order. Remove the weeds from seedling-beds by hand-picking, and keep the Dutch hoe at work amongst transplanted trees and shrubs in nursery rows. All the spare ground intended for a green or root crop should receive a heavy dressing of manure, compost, or lime, and be well trenched in.—G. B., *Longleat.*

Orchard Houses.

TREES in a cool house having by this time fairly developed their leaves and fruit, the winter pruning should be supplemented by removing all superfluous shoots (of which, in vigorous and healthy trees, some will be left), and the fruit-bearing wood for the next season prepared. It is too early to thin the fruit, which, as a general rule, should be left until the stoning has been completed; but a general estimate can be formed of the quantity of fruit to be allowed, and the final pruning should be subordinated to this end. In old trees many fruit-bearing shoots must be sacrificed by thinning out clusters of them, and pinching the more vigorous, to preserve a proper balance; there is no danger in the last operation when the trees are under glass. Plenty of air must be given on warm and sunny days, and the trees watered according to the weather. During cold and frosty winds, close all the ventilators to windward. A careful watch must be kept for the appearance of aphis, from which few Peach houses are entirely free: if taken in time, it can be effectually destroyed by fumigation and washing.—R.

Hardy Fruits.

Peaches and Nectarines claim the first consideration, and must be finished disbudding forthwith. Green or black fly invariably puts in an appearance before or about this time, and directly it is seen steps for their eradication should be taken, for if left but a few days they increase like magic, and the work of extermination is consequently much more difficult. I have used Tobacco-powder, applied through a flour-dredger, whilst the dew was on the trees, with good results: but the cheapest remedy, if taken before the fly has got the upper hand, is to syringe the trees with soap-suds once a week; I do this as a preventive, and am seldom much troubled with the pest. As the weather becomes warmer, and after the fruit has been thinned and has begun to swell, I give the trees frequent washings with the hose or garden engine; if mildew be troublesome, the Gishurst Compound, used at the rate of from two to three ounces per gallon of water, and syringed over the trees, is a certain cure. Apricots have set thickly on the uppermost branches, but the lower ones are quite bare of fruit, so that all the thinning required will be to relieve the clusters by giving each fruit plenty of room in which to swell. In previous years I have been much pestered with the soft brown scale on Apricots, but have now dislodged it by winter dressing the whole of the trees with a composition of Gishurst and soot, also colouring the walls with a similar mixture. Early Cherries have set their fruit in profusion; and Morellos, now in full bloom, promise to be a heavy crop. The above-named remedies for fly should now be applied to these, as they are peculiarly liable to their attacks. Pears on south and west walls will now require to have the breastwood shortened back to two or three eyes or joints, and any branches that are required to fill blank spaces should be at once trained into position. The earliest fruit is also ready to thin, and in this respect Pears are as deserving of at least as much attention as Apricots or Peaches. Standard and pyramidal trees should not yet be pinched, as the young growths in a measure assist to guard the fruit from frost; as soon as danger in this respect is over, pinch them into the desired form. Plums on walls have also already made immense growth, and should now be shortened back. The fruit of most kinds having set in clusters, will shortly require to be thinned—at all events, those intended to be grown for dessert merit this attention; culinary kinds are not of so much importance, and if time cannot be spared they may be left to take their chance, though it be at the risk of having a very poor crop next year, for a superabundance one year is sure to end in failure the next. Grafts should be looked over, and if the clay be cracked, sprinkle them with water, and rub over to make them air-tight; some of the earliest grafts that have started into growth may require the clay removed and the ligatures slackened. Syringe the grafts occasionally when the weather is warm and dry, and keep the suckers rubbed off the stock as they are produced. If newly planted trees were mulched at the time of planting, there having been so much rain, watering will not be required for a long time, but it will be advisable to sprinkle the trees overhead on warm evenings. Strawberries are throwing up their flower-stems, and should the weather prove dry, they ought to have a thorough drenching of water as soon as the fruit is set—of course it is presumed that mulching has been applied long ago. Forced Strawberry plants should at once be planted out, as before recommended, in order to produce runners for next year.—W. WILDSMITH, *Heckfield.*

African Species of Coffee Plants.—A paper "On the African species of the genus *Coffea*," by W. P. Hiern, was read at a late meeting of the Linnean Society. The author describes fifteen species, eight of which are new. The Liberian or Monrovian Coffee, which has, from the flowers not having been seen, been considered a variety of C. arabica, is made a distinct species, and described under the name of C. liberica. The ordinary Coffee, C. arabica, is stated to be a native of Abyssinia, Central Africa, and Angola; it possesses several varieties in the size, shape, and colour of the berries.

THE FLOWER GARDEN.

MELIANTHUS MAJOR.

This is unquestionably one of the most effective half-hardy plants which we possess for the summer decoration of our flower gardens. With its finely-cut, large, glaucous foliage contrasting so effectively with the general types of vegetation, and being a plant of the easiest cultivation, the Melianthus has for years become a general favourite in all arrangements in which an attempt at sub-tropical gardening has been made. The best means to pursue as regards propagation is by seed, from which it is freely produced, as plants that are raised from seed early in the season make famous growth by planting-out time, and attain by mid-summer a height of from 3 ft. to 4 ft. When it is desirous to have larger plants by planting-out time, it is advisable to sow the seeds in autumn and keep them growing throughout the winter, and a stronger and earlier development will be the result. Until the present system called into vogue the nobler forms of vegetation for the embellishment of our summer gardens the Melianthus was favoured with a place in the greenhouse, and even now a well-grown specimen is by no means a despicable object in a conservatory. The Melianthus is all but hardy, when planted out upon a well-drained subsoil, in the south and western districts, in sheltered nooks, and although the stems may be cut down by frost, the roots will survive and push up in spring; but like Cannas, Arundo Donax versicolor, and similar plants, I find as a general rule, more particularly in wet, hard winters, that they are not to be depended upon, even when carefully mulched and otherwise protected, frequently suffering from accumulated damp. It is far safer to lift the roots and store them away under the stage of a cool house or shed, where the temperature is but a few degrees above zero. When seed can be depended on as true, there is little gain or necessity for resorting to any other means of providing stock. On referring to my notebook of the spring of 1875, I found that I had sown eight packets of seed, purchased from various firms, the majority of which did not vegetate, and such plants as were produced were in every instance those of M. minor; this spring I again sowed six packets with the same unfortunate results. My misfortune for two seasons in vegetating the seed of Melianthus major has prompted me to offer these few remarks, in the hope that seedsmen may examine for themselves the seeds of M. minor and M. major before sending them out to the public, for the difference between them is so apparent that the most inexperienced may at once detect it. G. Westland.

Melianthus major.

Wild Gardens and Woodland Flowers.—When "Exmouth" (see p. 407) speaks of three cartloads of Daffodils covering as many decent-sized copses, he can surely have but little idea of the way in which Daffodils in some places grow. There is a copse on this estate where three cartloads (taken up, as I imagine "Forester's" were, in clumps with earth attached to them) would be about as much missed as three buckets of water taken from the sea. In another wood here are scores of cartloads of the beautiful wild Hyacinth, and in another many cartloads of the pretty spotted-leaved Lungwort (Pulmonaria officinalis), and all these are seldom or never seen, except by the gamekeeper or woodman. Numbers of our native flowers are very beautiful, and there can certainly be no harm in removing them from a private copse to adorn and beautify a private drive.—D. Uphill, *Moreton, Dorchester.*

NEW CLEMATISES.

Great numbers of new varieties of these beautiful spring and summer-blooming climbers are now attracting attention, and some account of them can hardly fail to prove of service to those who are on the look-out for new plants characterised by real advance in their several properties. All novelties are not necessarily improvements, for some of them actually savour of retrogression, and it is well that those who write for the information of the inexperienced should be able to indicate the new introductions that it is most desirable to cultivate. We have now a wealth of these beautiful hardy climbers, and it is of importance that what is recommended as new should not be mere repetitions of what has gone before. The varieties of the Clematis are now multiplied with great rapidity, and there is a danger that the difference in each variety may not be sufficiently marked as to constitute a distinct form. C. ascotensis is one of the newer types, and is a seedling raised by the late Mr. John Standish. It is of a fine pale blue colour, rather brighter than C. tunbridgensis (a fine variety, that is not nearly so much grown as it deserves to be). The flowers are large, stout, and of fine form. Beauty of Surrey, one of Messrs. Jackman & Son's new varieties, partakes of the character of C. lanuginosa, the flowers very large, and of a charming light greyish-blue colour, and it is considered a decided advance towards a bright blue summer Clematis. I am of opinion that we already possess this in Lady Bovill, a very free-flowering variety of a pleasing pale blue colour. Excelsior (Cripps & Son) is a rich deep mauve-coloured variety, with a tendency on the part of the flowers to grow semi-double; it is this characteristic which gives it a value, and I mention it accordingly. I fear, however, it is likely to prove disappointing to many. Fair Rosamond (Jackman) is a grand variety of the patens or spring-blooming group, with large flowers of a blush-white tint, with an indistinct wine-red bar up the centre of each sepal. This variety is reported to be highly fragrant, which is an additional recommendation; but it should be stated the fragrance is much more perceptible under glass. C. John Murray (Jackman) belongs also to the patens type, and it is alike free-blooming and free-growing. The flowers are of a deep purplish-mauve, becoming reddish towards the base of the bar. Mr. Jackman regards this variety as being somewhat intermediate in season between the spring and summer varieties, and so filling up a kind of pause in the continuity of the floral service. C. Lady Stratford de Redcliffe (Jackman) is one of the Jackmani section, blooming through the summer and autumn, with large flowers of a delicate mauve, having a greenish tint in the centre bar or rib; this gives a charming light variety among the wealth of deeper-coloured flowers that are now getting so numerous. C. Madame Van Houtte, a Continental variety, is one of the lanuginosa type, and has large white flowers, suffused with a faint blue tint; the blossoms stout, and of fine form. C. Marie Lefebvre is from the same source and of the same character, the colour delicate or pale silvery-mauve, with a bar of a deeper tint. We have now a goodly number of the lanuginosa type with pale flowers, and some caution is necessary in insisting on their distinctness of character. Mrs. Quilter (Standish) is a large pure white variety in the way of lanuginosa nivea, to which section it belongs, but has stout flat flowers, and will prove very acceptable to those who are fond of purity of colour. Among the pale-flowered Clematises, C. Mrs. Melville, C. Mrs. G. Mitchell Innes, and C. Thomas Tennant, are new Scotch varieties of the lanuginosa type, raised by Mr. J. Anderson Henry. The former has pale mauve flowers of great size;

the second is a double variety, resembling C. John Gould Veitch in size and doubleness of the flower, but is of a slightly paler shade of lilac-mauve. It is considered to be much superior to that variety, in that it is a perpetual bloomer, commencing in early summer, and continuing to flower till late in the autumn; of a delicate pink colour, changing to ivory-white with age. This produces enormous flowers, in fact, the prevailing characteristic of all the varieties of Mr. J. A. Henry's raising is the enormous size of their flowers. It is recommended by those who are sending it out as the finest light-coloured Clematis in cultivation. C. Stella (Jackman) is one of the patens type, with light violet flowers, and a distinct bar of deep reddish-plum colour in the centre of each sepal. This is a delicately scented variety, and it is pleasant to find Mr. Jackman's endeavour to impart fragrance to his new varieties attended with so much success. The Queen (Jackman) comes into the same spring-flowering division, with large finely formed flowers of a delicate lavender tint, scented with the perfume of the Primrose. Lastly comes C. Victoria, one of the C. Jackmani section, and producing deep reddish-mauve flowers of a very distinct hue of colour.

Were the new varieties raised during the last seven or eight years calculated, and their total given, the number would be astonishingly large, but large as it is, there is scarcely an inferior one among them. A greater reason for wonder is that these fine hardy Clematises are not more grown, for they stand unrivalled for their effectiveness and adaptability for all purposes of garden and conservatory decoration, and, seeing how much hardihood of character they possess, they ought to be as generally grown as the Virginian Creeper and Woodbine. What a fine feature they would make on roadside villas and cottages! Their hardihood—at least that of the varieties of the C. Jackmanni type—has been placed beyond doubt, thereby eminently fitting them for shady and effective growth in such places. The varieties of C. patens and C. lanuginosa are decidedly of a more tender character, and this should be borne in mind when a selection of position for their growth is being made. The better the plants are established, however, the more likely are they to pass through the ordeal of severe weather with comparative safety. Quo.

BEDDING PELARGONIUMS TRIED AT CHISWICK.

An extensive collection of these was arranged for comparison in the trial beds last year. Out of 350 varieties the following received first-class certificates:—

I.—Scarlets.

1. **Harry King** (E. G. Henderson & Son).—A showy variety of moderately vigorous habit, with zonate leaves; the flowers are of good shape, freely produced in moderate-sized trusses of a bright scarlet with a white eye.

2. **Rosa Little** (H. Little).—A dwarf-habited variety, the leaves having a vandyked zone; the flowers, of which both pip and truss are large and fine, are of a rich deep solid scarlet colour, with a small white eye. The flowers are well displayed and of exquisite shape.

3. **Tyrsal Rival** (Laing).—A dwarf, compact-growing variety, the leaves of which are marked with a dark zone; the flowers are large, of fine form, and produced in tolerably full trusses, the colour being a rich scarlet with small white eye. It is a fine zonal scarlet.

4. **General Outram.**—A variety of a medium vigour and of a spreading habit of growth. The leaves are dark-zoned, and the flowers, which are borne in large bold trusses, are of a rich deep scarlet, the individual pips being of free shape and quality.

2.—Rosy Crimsons or Cerises.

5. **Caxton** (Pearson).—A variety of moderately dense habit and of even growth. The leaves are green without zones. The flowers are moderate-sized, in rather small but dense trusses, and are of an intense rosy crimson, and very effective.

6. **Colonel Wright** (Pearson).—A fine, close-habited, and very showy variety, of medium vigour of growth. The leaves are green, not zoned. The flowers, which are freely produced in large trusses, are of a light rosy scarlet, and very showy. The flower trusses are abundant, and hence very effective, as well as from being whole-coloured, which gives them a density and solidity which is absent from shaded flowers.

7. **Mark Twain** (F. Miles).—A dwarf-growing variety of spreading but compact habit, and a free bloomer. The leaves have a dark zone, and the flowers are large, in large trusses, and of a deep opaque scarlet. The individual pips are fine, and hence the variety is an effective one.

8. **Mrs. J. George** (W. Paul).—A variety of dwarf and moderately vigorous habit. The leaves have a broad faint zone. The flowers are produced in remarkably fine trusses, and are individually of good size and possess form as well as quality, the colour being a pale scarlet.

3.—Pinks.

9. **Lady Emily** (Pearson).—A dwarf-growing vigorous variety of spreading habit, with pale green leaves. The flowers are of a bright deep pink, white at the base of the upper petals, the pips being large, and the trusses fine.

10. **Lucy** (Pearson).—A variety of tolerably compact habit and a free bloomer. The flowers are of a fine rose pink and are borne in medium-sized trusses.

11. **Mrs. Augusta Miles** (Pearson).—A compact-growing variety of moderate vigour, with green leaves of medium size. The flowers are borne profusely in trusses of moderate size of a deep bright pink with white eye, which makes them very attractive.

12. **Mrs. Holden** (Pearson).—A variety of compact, even growth, producing its medium-sized trusses of blossom in profusion. The flowers are of a bright pink colour and remarkably showy.

4.—Bronze Zonals.

13. **Rev. C. P. Peach** (Laing).—A showy variety of dense, compact, even growth, with large leaves of a greenish-yellow colour, marked by a broad, deep, copper-coloured zone. Flowers light scarlet.

14. **W. E. Gumbleton** (Laing).—A variety of compact growth. The leaves greenish-yellow, with a broad zone of a dark bronze colour and a narrow yellow-green border. Flowers scarlet.

5.—Gold-leaved.

15. **Golden Harry Hieover** (E. G. Henderson & Son).—A variety of dwarf, spreading, free-growing habit. The leaves are golden green, with a narrow vandyked zone of dark bronze and broad golden edge, very showy. Flowers scarlet. A very desirable variety.

6.—Ivy-leaved.

16. **Gem of the Season** (S. Ford).—A variety of free rambling growth, with green Ivy-like leaves, and abundant flowers of large size and a pale rosy-pink colour. The flowers are very freely produced, but do not stand well; it will nevertheless be useful for baskets.

17. **Argus** (G. Smith).—A variety of moderately free growth, with green Ivy-like leaves slightly marked with brown. The flowers are of a deep rosy-pink, with dark spots on the upper petals, and are of a tolerably good shape.

It is proposed amongst the other trials of 1876 to grow all the Ivy-leaved varieties obtainable, and which are now rather numerous, as pot plants, since they are an extremely interesting group, and are more useful under glass than in the flower borders. T. MOORE.

PROPAGATION AND CULTURE OF VERBENAS.

VERBENAS, as decorative plants for flower garden purposes, seem to have fallen back of late years, an occurrence to be regretted, inasmuch as we possess no other plants in all respects calculated to fill their places. Verbenas, it is true, sometimes die suddenly in large patches during the height of the flowering season, but this fault, I think, might be overcome by paying a little more attention to the wants of the plants. It is well understood that if it be desired to prevent degeneracy in any family of plants, change of both soil and locality is necessary. Nevertheless, in defiance of this we propagate year after year from the same stocks for the purpose of replenishing probably the same beds, quite overlooking the fact that the principal elements in the soil required by this particular plant may be exhausted from being repeatedly cropped with Verbenas. It is generally admitted that if we wish a good crop of Potatoes we must get seed-tubers from a different locality from that in which they are to grow; and the greater the difference existing in the soils the better will be the result. These principles are, I fear, too often violated with respect to Verbenas, and the same thing happens in the case of the Calceolaria, and, perhaps, with the exception of the Pelargonium, most plants will ultimately undergo a similar physical degeneracy if this matter be disregarded. The remedy is, therefore, in our power, namely, exchanging cuttings one with another from distant places, and changing the soil in the beds.

Propagation by Seed.

To succeed in flowering seedlings the summer following the sowing of the seed, it is best to sow in September, early in the month, and to keep them steadily growing throughout the winter. When the seed is sown, plunge the pots in a frame where the temperature is kept about 60° at night; keep the soil damp, but not sodden, and to prevent much watering being required, cover each pot with a bit of glass until the seeds vegetate and break the surface. Prick out the plants into single pots when they have formed a couple of rough leaves, and place them near the glass all the winter, being rather sparing in the amount of water supplied them until there is more sunshine and longer days. A second shift may be given them at the latter end of April, which will add much to their vigour before being planted out into the testing-ground out-of-doors; but should the plants be wanted to flower inside, they should have a third shift into 5-in. pots before flowering.

Propagation by Cuttings.

When speaking of any plant that roots easily, the common expression used is that it will "strike like a Verbena," a circumstance which explains how easily Verbenas are multiplied in this way. For spring practice the best plan is to take a number of 9-in. saucers, and fill these with silver sand in a loose manner; then put as much water into the saucers as they will contain, thereby making the sand look in consistency like pulp; the cuttings should then be inserted as thickly together as possible; each saucer should then be placed inside a similar sized one, filled and kept full of water; these should be put in a hot place, such as on a flue or pipe in a Vinery or other house. They should then be placed in the sunshine, and the moisture maintained by keeping the outermost saucer filled with water, none being put on the cuttings from the day they are inserted until they are rooted. In this way we have rooted thousands with but a nominal percentage of loss. The cuttings root sufficiently for potting off in the course of eight or ten days, and the smallest cutting succeeds. With reference to potting when struck, a thin flat piece of stick is used for the purpose of removing them in a body from these saucers; and the sand breaks up readily, while the young plants separate with a good ball of sand adhering to their roots. Fill a number of 3-in. pots loosely with rich light compost, insert the fore-finger into the centre of each pot, and then drop a plant with the ball entire into each, adjusting the compost moderately firm round the roots. Water well, and re-place in heat; shade for the first few days if the sun shine brightly, otherwise shading is not required. When these plants have established themselves in their pots, they may be put in a cold frame to harden off prior to being planted out.

Pot Culture.

Verbenas are often used for the adornment of the greenhouse and conservatory, and beautiful objects they are when well grown; but to accomplish this in the case of Verbenas, as in that of every other plant used for a similar purpose, they must be attended to constantly and well, never allowing green fly or mildew a footing on them, nor the shoots to fall over each other by getting top-heavy through neglect of supports or the want of pinching; do not over-pot with the object of saving time. The rule to follow in regard to potting is to give larger shifts whenever the pots get filled with roots until the plants have reached the dimensions desired, pinching out the points of those shoots that threaten to destroy the symmetry of the plants through too vigorous growth. The compost should consist of three parts light fibry loam, one part leaf-mould, and one part fresh horse-droppings rubbed through a sieve; the loam should not be sifted but well broken up, and these three ingredients should be properly incorporated. Drainage is an important consideration; let this be open and free by placing carefully plenty of broken pots into each pot, and covering these with a layer of fibry turf or Moss. Water copiously from the time when active growth commences until the flowering is over, they should also be syringed in sunny days with soapy water twice a week to prevent green fly or mildew becoming established. Ventilate freely when the air is mild and dry, but be careful of this in foggy weather.

Select Bedding Verbenas.

Crimson King must be regarded as the best bedding kind in the crimson division; it is dwarf, vigorous, and of uniform growth, affording a blaze of bloom dense and brilliant. Snowflake holds its place as a good white, but it requires slightly more pegging down to prevent its rambling. Purple King, the most popular of Verbenas, is dwarf and compact in habit, and a profuse flowerer. Lord Raglan is next to Purple King as regards hardiness, and it is a superior flower both in pip and truss; colour, magenta scarlet. Old Scarlet Defiance is unsurpassed both as regards growth and blossom; it still retains its hardy vigorous properties, and is as serviceable as when we first knew it, although it has outlived scores of rivals. Géant des Batailles, another most vigorous spreading kind, with large lurid-crimson flowers, stamped with maroon around the eye, is an old and well-known sort. Firefly, a dazzling scarlet, has a neat truss. Leah is a soft pink kind, with a crimson eye. La Grande Boule de Neige is a beautiful white sort. Ladybird, flesh colour, has a purple stain around the eye. Jupiter is rich plum, but on the whole, although there are plenty of pretty varieties of this rich, dark plum shade, none of them keep their richness against sun and rain. Rev. S. R. Hole, pale lilac, tinted with crimson, has a splendid truss, and is a most profuse bloomer.

Varieties best suitable for Pot Culture.

Apollo, blush, has an immense truss of extra large flowers; King of Lilacs, lavender blue, is another splendid sort; Géant des Batailles; Foxhunter, scarlet, with white eye; Rev. S. R. Hole; Rev. P. M. Smith; Princess of Wales, a delicate pink and white striped variety; Prince of Wales, a splendid scarlet self; Richard Dean, a purple kind, with a bold white eye; Thomas Harris, mulberry, with clear white centre; Enchantress, white ground, stamped with purple over the centre; and Carnation, white and crimson striped, are all good kinds.—" The Gardener."

Selecting Plants for Spring Gardens.—It is a mistake, and a very common one, to use plants for spring gardens that do not attain their full beauty until the beds are required for their summer occupants. We are constantly hearing complaints of the shortness of the summer display, and yet by having beds filled with late-blooming spring plants the season is still further reduced, owing to a reluctance to remove plants in bloom to make room for their successors. Beautiful as Collinsias and many other plants are that flower in May, they are better adapted for the decoration of mixed borders than for flower-beds; for, if Calceolarias and similar plants be not planted out before the end of May or beginning of June, a successful result need not be looked for.—J. Groom, *Henham.*

Yellow Wallflowers.—The tall golden-yellow variety, mis-named Tom Thumb, is a fine kind for spring decoration, producing just now a splendid mass of colour. It is a robust grower, and has flowers of fine form and substance, rivalling in size the best of the crimson kind. It is an excellent kind for furnishing cut flowers, as its trusses are borne on long straight stalks. As a rule, the yellow is truer to character than the crimson, as many of the latter are apt to run into lighter hues, whilst the true yellow never varies. If some enterprising flower-grower for market would try this variety for one season, I do not think he would have cause to regret having done so. The old Belvoir Yellow has the most compact habit for bedding purposes, but of late it has to some extent lost its character for constancy, and does not now come so true from seed as formerly.—D.

The Utah Aloe (A. Utahense).—This is a new species recently described by Englemann, and collected by Dr. Palmer and Mr. J. E. Johnson. It is well worth the attention of horticulturists. The leaves, which are as usual thick and fleshy, terminate in a strong spine, the margins mostly spine-toothed, 1 ft. to 2 ft. long, a crowded crown ranging from the base of the flower-stem, which is only 5 ft. or 6 ft. high, springing from a short stump or trunk. The flowers are small and yellow, close set against the main stem in pairs or fours.—Dr. Kellogg. [This is probably a hardy species.]

Perennial Larkspurs.—Great improvements have, according to the " Florist," been worked among Delphiniums during the past few years. A bed of them finely flowered is a striking object in its rich hues of blue. The double and single forms alike have been subject to the change, and the long, huge, symmetrical, closely-set spikes are objects of great beauty. Among the double flowers the following are particularly fine :—Argus, azure-blue striped and tipped with rose; Clare Courant, bright azure-blue, distinct and very fine; grandiflorum plenum, rich dark shining blue, tinted with bronzy red, large full flowers; Herman Stenger, outer petals bright violet-blue, centre petals rosy pink, very fine; Keteleeri, a distinct and beautiful variety, producing freely dense spikes of lavender-blue flowers; Paul et Virginie, outer petals bright blue, centre petals bronzy red, striped and edged with white, very showy and striking; Roi Leopold, outer petals bright blue, inner petals rosy violet, centre sulphur and white, very fine; and Thiers, azure-blue, centre white and rosy pink, very distinct and beautiful. Of the single flowers, which, after all, are the most striking, the following are effective :—amabilis, azure-blue, changing to rosy lilac, white and orange centre, a very distinct effective and very beautiful variety; Celestial, ultramarine-blue with conspicuous velvety brown centre, very effective and striking; formosum lilacinum, light lavender, tipped with pink, ornamented white centre, very distinct and extra fine; La Belle Alliance, bright violet-blue, with a white and orange centre, very beautiful; Madame Henri Jacotot, bright azure-blue, suffused with delicate rosy pink; nudicaule, bright orange-red, dwarf, very distinct and effective; and pulcherrima, rich shining blue, changing to reddish bronze, orange and white centre, a very distinct, effective, and beautiful variety.

THE CASTOR-OIL PLANT AS A TREE.

In France, under favourable circumstances, Castor-oil Plants sometimes grow to the height of 10 ft. or even 12 ft., and have leaves nearly a yard in width. In this country they give indications of becoming arborescent in autumn; but the cold weather which soon afterwards sets in puts a stop to further progress in that direction. The Tree Ricinus is not a distinct species; on the contrary, it is the type of all the varieties with which we are acquainted, and may be met with continually in warm climates, like those of the Riviera and Algeria, and even as far north as Montpellier, provided it be protected against frost by straw or matting. The common Castor-oil Plant likes a warm aspect and a light rich soil. It is easily, as all of us know, raised from seed, which should be sown in heat early in spring. As soon as the young plants are old enough to handle, they should be pricked out separately into pots, and again placed in heat. They must be well watered and shaded until they have become thoroughly established, and should be allowed plenty of air on fine days, otherwise they will throw out long, weak shoots that very materially detract from their beauty. Their growth being very fast, the roots soon fill the pots in which they have been placed, and when that occurs they must be shifted into larger ones. Towards the end of this month they may be gradually hardened off, and finally transplanted out-of-doors in good rich soil, when all danger from frost is over, care being taken to give them plenty of water in dry weather. When Castor-oil Plants are once transplanted, their roots spread so rapidly that they cannot be lifted and potted again successfully; therefore, if they are to be grown in pots they must always be kept potted, shifting them, of course, into larger ones from time to time. The only care which they require during the winter is frequent but moderate watering, giving them air whenever the weather is favourable. Thus treated Castor-oil Plants may be kept in growth and beauty for several years in succession, when they will form trees, which, if not as large as that here represented, or those grown in more favoured climates, will at least add beauty to our gardens in summer. The most notable varieties are Ricinus sanguineus, the stem, leaf-stalks, young leaves, and fruit of which are of a blood-red colour; R. borboniensis, which in southern climates attains a great height; and R. giganteus. Q.

The Castor-oil Plant as a Tree.

The Rocky Mountain Columbine (Aquilegia cœrulea).—Having gathered some hundreds of blossoms of this beautiful Columbine in its native country, *i.e.*, the eastern slope of the Rocky Mountains, will you allow me to differ from some of the conclusions in the admirable article on Columbines in The Garden of April 22. Mr. Niven divides A. leptoceras of Nuttall into two distinct varieties; this, I venture to think, is unnecessary, as in almost every case I have found plants bearing blue flowers growing side by side with those bearing yellow and pinkish flowers, and every intermediate shade between the two extremes well represented. This leads me to adhere to Professor Porter's description of the plant under its original and best known name of A. cœrulea, in the "Flora of Colorado," and to Professor Jon. Coulter, in his botanical paper in the "United States Geological Survey Report on Montana in 1872":—"Flowers 2 in. to 2½ in. in diameter, pale blue, sometimes ochroleucous, pinkish or white." In my experience the blue flowers fully equal the yellow in size. The finest patch I ever found was on the edge of the great Pine forest that covers the slopes of Pike's Peak, Colorado. The flowers were nearly all blue, of an immense size, and shone out from under the shade of the Pinus ponderosa like pale blue stars. This plant flourishes on shaded mountain slopes in alluvial soil, from 7000 ft. to 11,000 ft. altitude, throughout the territories of Colorado, Montana, Idaho, and Wyoming.—Rose G. Kingsley, *Byfleet.*

Chrysanthemums as Bedding Plants.—Independently of their value for conservatory decoration in pots, the following four sorts of Chrysanthemums make first-rate summer and autumn bedding plants. They are neat and dwarf in habit, and profuse and continuous bloomers, admirably adapted for back lines in wide borders, or for masses in large beds. They are not, we think (says the "Gardener") so well adapted for cold late localities as for early ones, still they are worth trying experimentally even in the coldest places, for the sake of variety. They are capital plants for the conservatory when planted in the open ground and lifted and potted after the flowers are formed. The sorts alluded to are Delphine Caboche, a kind which grows about 2 ft. high, and which is neat and compact in habit. The flowers are of the Pompone class, very double, and of a fine rosy-purple colour. It blooms profusely, when planted out, from July to October and November, and where the climate is favourable, it continues on to Christmas; in wet cold places it cannot be expected to last so long. The next is called Illustration, a variety not so tall as the preceding, being about 18 in. high. Its flowers are very double and excellent in form, but small—light pink on the margin, shading into clear orange in the centre. It blooms along with the preceding, and to the same late period, in great profusion. The third variety is nanum, a sort which grows to about the height of the last, but which has flowers about twice the size; they are white changing to rosy-lilac. It comes into bloom rather earlier than the other two, but lasts quite as late. Precocité, the fourth kind referred to, grows to the same height as the two last. Its flowers are medium-sized, bright golden-yellow, and are produced in great abundance from July to December.

Protecting Choice Hardy Plants from Slugs.—Many hardy flowers of the choicest and newest kinds perish from the attacks of slugs, sometimes without the cause being observed. To the climate, or the soil, or to the fact that the lost favourite is "Alpine" in its character, is commonly set down the damage done by slugs, which are nowhere more abundant than on many rock gardens, where the rarest flowers are set. Among the various ways of saving plants from these enemies, we have seen nothing more effectual than the perforated zinc protectors, first described in The Garden by the Rev. Mr. Ewbank. A strip of perforated zinc, 4 in. or 5 in. high, is placed round the plant overlapping a little at the junction, and this acts as a complete protector. There is good evidence of its value to be seen in Mr. G. F. Wilson's garden at Weybridge Heath, where many of the plants are thus protected, and in consequence quite uninjured. This perforated zinc is to be obtained from Messrs. Braby & Co., Fitzroy Works, Euston Road.—V.

Wild Gardens and Woodland Flowers.—I venture to say that had "Exmouth" been better acquainted with the particulars of the case to which he refers (see p. 407), he would not have written as he did. The fact is, the three cartloads of Daffodils were not "stolen from meadows, banks, hedges, or copses," but were dug out of an old orchard, about one-third of the surface of which was covered with Daffodils. The occupier of the orchard asked me to take as many away as I wanted; I therefore thinned out two cartloads, leaving in the ground probably three cartloads more; but the tenant, thinking that I had not taken as many as he would like to get rid of, dug up another cartload and sent them to me. Your correspondent should remember that the Daffodil is considered to be a poisonous plant, and is of no use as herbage ;|therefore, a tenant who has to pay a high rent for Grass land looks upon Daffodils when growing in such masses as mere weeds. Allow me also to inform "Exmouth" that they were not planted "alongside a drive where but few can delight in seeing them." On the contrary, the drive in question, where the three cartloads were planted, is as free and open to the public as Hyde Park; it is indeed the most frequented drive on the estate, being used by thousands from villages and towns far and near. Lastly, the two cartloads of Lily-of-the-Valley were planted near the same drive, and were brought from an outlying copse where acres are overrun with this plant, and where the public are not allowed to enter. After this explanation I leave your readers to judge whether or not I deserve the harsh remarks applied to me by "Exmouth."—A Forester.

Hedges and the Wild Garden.—The writer planted a hedge entirely of Wild Roses, a few years ago, and sowed the berries of the Briony and the Traveller's Joy or Wild Clematis between the suckers of Wild Roses; everything grew with astonishing rapidity, and in about four years the hedge was invulnerable. No bushes of any kind had been introduced, and consequently, although the hedge was a mass of blossom, and beautiful both from flowers in the summer, and berries in the autumn, it naturally became top-heavy from the want of support, and tumbled down after reaching the height of 4 or 5 ft. But had a very few trees or bushes been planted at the commencement—say a yard or more apart—the Roses would have had sufficient support for their long thorny branches to have rendered the hedge firm as well as invulnerable and beautiful. The Traveller's Joy is a most useful as well as ornamental material for hedges; the strength of its interlacing branches is extraordinary, and will form a resistance equal to small ropes, whilst the thorns of the Roses defy the intrusion of hands or feet.—L. L.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Officinal Rhubarb.—I can testify with "Oxon" as to the remarkable vigour and fine effect of Rheum officinale, which is likely to be very valuable for the wild garden. I notice in my collection that Rheum Emodi is only now pushing its first small leaves above ground, whereas the Officinal Rhubarb appears to be at full growth, so far as its leaves are concerned. Doubtless, it may also have some culinary value.—V.

Camellias Out-of-doors.—A correspondent having made some remarks upon out-door Camellias as being very rare, it may be interesting to him to know that I possess a tree of the Red Camellia, growing against the wall of a hothouse, which is more than thirty years old, and which never fails to produce hundreds of blossoms commencing in the month of February; last year it had considerably more than a thousand. I have another White Camellia growing against the wall of a pit which blossoms freely annually, and I have others against a wire trellis without any shelter at the back which likewise blossom well.—Y.

Pelargoniums grown on Turves.—Mr. Webber has called our ("Gardeners' Chronicle") attention to an admirable plan of growing bedding Pelargoniums on turves instead of in pots. It seems that the cuttings are put into 48-pots in the ordinary way in September, and stored in such pots until the month of March, when they are planted on or in the turves, and make fine plants by bedding-out time.

ROSE LORE.

Many persons who have taken so prominent a part in public life as to have attracted the attention of history share, according to the "Pall Mall Gazette," with the black-beetle a positive distaste for the Rose. The famous Chevalier de Guise could not smell a Rose without feeling uncomfortable; and Venieri, one of the Doges of Venice, suffered under the same disqualification for the pursuits of gardening. Anne of Austria, wife of Louis XIII., could not even look at a Rose in a painting without being seized with tantrums. Nevertheless, many people who are willing as a rule to take examples from the great have persisted in entertaining friendly sentiments towards this flower, and every time that the spring and early summer bring back the pretty vegetable they fall to telling one another all they know about it. In the East there is still a belief that the first Rose was formed by a tear of the prophet Mahomet, but nations of more cool and disciplined imagination have sometimes admitted that its origin is lost in obscurity. Roses were used very early in history among the most potent ingredients of love philters. They seem to have been imported by the Romans from Egypt until the reign of Domitian. Antiochus slept upon a bed of Rose-leaves. Mark Antony begged that Cleopatra would cover his tomb with these flowers, and "mea rosa" was a favourite term of endearment among Roman lovers, as one would say "mon chou" (my Cabbage) nowadays in France. Homer has adorned the shield of Achilles and the helmet of Hector with Roses. Among the Greeks it was the custom to leave bequests for the maintenance of sepulchral Rose-gardens over the grave of the testator; and at Torcallo, near Venice, an inscription may still be seen that shows that this fashion was adopted in Italy. In Stock's collection of engravings on stone there is a beautiful design cut in garnet. It represents a butterfly settling on a Rose, and it is supposed to commemorate the death of a young girl. In Turkey a stone Rose is often sculptured above the graves of unmarried women. A charming bas-relief on the tomb of Mdme. De la Live, who died at the age of twenty, represents Time mowing a Rose with his scythe. According to Indian mythology, Pagodasiri, one of the wives of Vishnus was found in a Rose. Zoroaster is said to have made a Rose-tree spring out of the earth and bud and blossom in the presence of Darius, who had called upon him to perform a miracle. In Babylon a preparation of shoe-leather was much esteemed when it had been impregnated with the scent of Roses; and Abdulkari, an eminent Turk, who wanted to live there, being made aware of this fact, discovered an ingenious way to profit by it. In reply to a demand which he had made for the freedom of the city, the Babylonians sent him a bowl brimful of water, to signify that there was no room among them for an intruder. Abdulkari placed a Rose-leaf on the surface of the water without spilling a drop of it, and having thus indicated that he might be received without making a mess, he obtained the object of his desire.

In one of the books attributed to Solomon eternal wisdom is compared to the plantations of Rose-trees at Jericho. Princess Nourmahal, the most lovely lady in the harem of a Great Mogul, had a canal filled with Rose-water and rowed about on it with her august consort. The heat of the sun disengaged the essential oil from the water, and their Majesties, having observed the fact, invented otto of Roses. The Emperor Heliogabalus filled a fish-pond with Rose-water—it is nowhere said whether the fishes approved of this proceeding. When the Soldan Saladin, who had so much trouble with hard-fisted English King Richard and his turbulent Christian friends, took Jerusalem in 1188, he would not enter the Temple, which he profanely called a mosque, till he had had its walls washed with Rose-water, and Sannt assures us that 500 camels were no more than sufficient to carry the purifying liquid. Also, after the taking of Constantinople by Mahomet II. in 1455, the church of St. Sophia was solemnly purified with Rose-water before it was converted into a mosque. The high priest of the Hebrews wore a crown of Roses when he offered up certain sacrifices under the Mosaic dispensation; and it was perhaps in remembrance of this fact that the Synod of Nismes, which was held in the third century, enjoined every Jew to wear a Rose on his breast as a distinguishing mark of inferiority. In many countries the Jews still celebrate the festival of Easter Flowers, during which they ornament their lamps, chandeliers, and beds with Roses. Thus it happened that these flowers were hateful to the early Christians, and are often condemned in the writings of the Fathers, who professed that they could not understand that pious people could think with equanimity of Roses when they remembered the crown of thorns; afterwards this hostile feeling seems to have died out. When Marie Antoinette passed through Nancy on her way to be married to Louis XVI., the ladies of Lorraine prepared her a bed strewed with Roses. In the Middle Ages Roses were held so precious in France that a royal licence was necessary to grow them. Charlemagne recommended the cultivation of the Rose in his "Capitulation." The Persians of Shiraz stop their wine-bottles with Roses, which give the wine a pleasing smell; and during the festival of Abrizan, which takes place during the equinox, Persian ladies throw Roses at each other when they pay visits. At Rome it was the practice of the Church to bless the Rose on a special day set apart, which was called Rose Sunday. The custom of blessing the Golden Rose seems to have begun in the eleventh or twelfth century. The benediction was pronounced with particular solemnity on the fourth Sunday in Lent, and the Golden Rose thus consecrated was given as a mark of the Sovereign Pontiff's favour to some prince or princess. Alexander III., who had been received with great honour during a journey which he made in France, sent the Golden Rose to Louis the Young as a sort of graceful compliment. Subsequently the giving of the Golden Rose became an authoritative act by which the Pope officially recognised the rights of Christian sovereigns. Thus Urban V. gave the Golden Rose to Joan, Queen of Sicily, in 1368, thereby preferring her to the King of Cyprus. Henry VIII. of England received a Golden Rose both from Julius II. and from Leo X. Towards the close of the last century the Golden Rose appears to have been given almost indiscriminately to any travelling prince who would pay a sum equivalent to about £400 in fees for it.

There are an infinite variety of stories about Roses. When Milton was blind the Duke of Buckingham, who visited him, observed that his wife was a Rose. The lady had a fine high temper, and so Milton answered that doubtless she was, for he could feel her thorns. Frederick the Great was walking in the gardens of Potsdam with Voltaire, and asked the amazing Frenchman for a Rose. He picked one, and presented it to the king with the remark that it had grown beneath his Majesty's laurels. Luther had a Rose graven on his seal. A Rose-tree in the park of Roxburgh marks the place where James II. of Scotland died. At Santiago, in Chili, whenever a stranger is received in a house, each of the ladies of the family offers him a Rose. To show the preference which Madame de Genlis entertained for old men above old women, she was fond of saying that Oaks improved with time, but Roses faded. It may be mentioned in passing that Madame de Genlis has the credit, if we have been rightly informed, of having introduced the first Moss Roses ever seen into France.

Among the incredible number of names given to Roses there is the Rose of Scotland (R. spinosissima); it is a very prickly flower. The Rose of York and Lancaster (Rosa damascena versicolor), a red and white Rose, recalls the ending of the greatest English civil war. There is quite a nobility of Roses, nearly all the heroes and heroines of history being identified with some flower of this type. It is as good a nobility as any other. There is even a Brown Rose (R. Brownii) in Nepaul, which will transmit that gentleman's name to posterity with the Lawrence Rose; but the Brown Rose will not survive a frost, says the perfect gardener. Among the Greeks, the Romans, and the Gauls, Parsley, Ivy, Myrtle, and Roses were looked upon as valuable remedies for people who had drunk more wine than was good for them. In Capua Roses were employed by the local medical men as tonics good for stomachs fatigued by overeating. A decoction of Roses was supposed to have excellent astringent properties. Hoffman recommends it in pleurisy; Paracelsus thinks that when mixed with honey it will lengthen life. A long list of authorities may be produced to show that Rose-leaves discreetly used are a perfect cure for hydrophobia. A spirit made or flavoured with Roses was the favourite cordial of Philip the Handsome, and was considered by Charlemagne as a specific against fainting from loss of blood in battle. A poultice of Roses was long employed for flesh wounds, and Roses preserved are still believed in many places to cure consumption and all diseases of the throat and lungs, a welcome statement, if supported by fact; but that is not the case. The best preparation of them is said to be made from Rosebuds and sugar in equal parts.

The Albert Memorial in Hyde Park.—The history of this, which is certainly no addition to the charms of Hyde Park, is traced in the April number of "All the Year Round." According to it, "Decorative Art" demanded that the bronze statue should be gilt; and the result is the monstrosity now on view in Hyde Park. Description fails to convey any idea of the frightful reality. There is an old Greek story of a banquet from which the sun turned away his eye; but the pale luminary which visits London appears to take delight in dwelling on the gilded effigy—in playing round it, and in revealing its barbaresque ugliness. With the gold scraped off, the statue would be—so far as a sitting statue can be—well enough; but the glittering surface sets all artistic effect at naught. And this is the outcome of £120,000—a gingerbread spire of faded gold, and a glaring colossus, the laughter of foreigners and the wonder of nursemaids.

THE GARDEN IN THE HOUSE.

VASE OF SIMPLE FLOWERS.

AT the present moment I have before me a little floral table ornament, consisting of very simple flowers only; and yet this arrangement has such a pretty effect that I am tempted to give a description of it. The stand or vase is as simple as the flowers which it contains, being of wicker-work varnished, so as to give it a light brown colour. Its form is that of a flat tazza, containing a zinc pan about the size of an ordinary saucer, perhaps a little larger. Out of this rise three rods about 12 in. long, drawn together in the form of a tripod, and which support another tazza of a much smaller size than the lower one. Resting on the ornamental basket-work round the edge of the lower tazza are placed small fronds of hardy Ferns and leaves of the Lily of the Valley; the tazza itself is filled with blue Wild Hyacinths and Lily of the Valley, with some of the leaves of the latter, and a few fronds interspersed. Up the rods which support the upper tazza are twined sprays of small-leaved Ivy, the young shoots and leaves of which at this season have so many pretty tints. The upper tazza is dressed similarly to the lower one, with the exception of the introduction of a few young spikes of Ribbon Grass, which give a graceful finish to the top. This little arrangement is not suited for being subjected to artificial light, as the blue of the Hyacinths loses its pretty shade; but for the decoration of the drawing-room this is not of so much importance as if it were required for the dinner table. Last week this same vase was fitted up with Lily of the Valley and pink China Rose-buds, which looked very well, but the China Roses soon drop their petals; therefore, arrangements in which they are introduced do not last long in a fresh state compared with other flowers. The shoots of Ribbon Grass will be found at this season to be very useful for decorative purposes; while young they have many pretty shades, and have not the heavy look which they acquire later in the season. A. HASSARD.

Cut Flowers: How to Preserve them.—For this purpose nothing is better than rain-water, which should be changed every day, or every alternate day. Before arranging the flowers in the glass or flower-stand, trim the ends of the stalks with a sharp knife, so as to make a clean cut. The stems are often bruised in the plucking; the bruised part decays, and renders the water sooner impure and unwholesome than would be the case were the water absorbed through a clean-cut section of the stem, which will perform its functions without decay till the flowers have faded. To guard against the possibility of any unpleasant smell, and for other reasons—seeing that water is an absorbent of noxious gases—if the flowers be intended for a close sick chamber, let the water be changed every day; by this means any unpleasant smell will be avoided. Camphor has been suggested as a sort of disinfectant, and at the same time as a material likely to prolong the beauty of the flowers. Its advantage is, however, more imaginary than real; therefore do not trust to it as a substitute for the small amount of trouble incurred in the simple process above suggested. Salt has also been used; but though it may not hurt some flowers, there are others which will be injured by it. In flower-stands where sand is used, and must necessarily remain for some time, mix with the sand one-eighth part in bulk of small pieces of charcoal, broken about the size of Peas; this will keep it sweet for weeks. The above advice is given by Mr. Niven, of the Hull Botanic Gardens, in a small pamphlet descriptive of a successful attempt to distribute cut flowers, &c., among the sick and poor of Hull. It contains hints useful to those interested in organising effectively work of this kind, and is published by W. Harvatt, 162, Whitefriargate, Hull.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

The Hart's-tongue Fern as a Room Plant.—In a room in the Swan Inn at Henley-in-Arden, I saw a plant of this on March 17 with more than 100 perfect and large fronds, and with a diameter of nearly 3 ft. I ascertained that it had been in the room for four years, and it was one of the handsomest plants I have ever seen grown in a dwelling-house.—VIATOR.

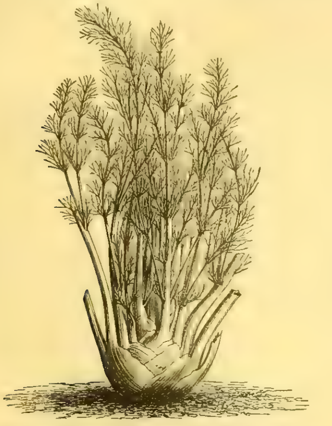
Pansies Blooming in Water all the Winter.—A lady writes to Mr. Vick January 24: "I must tell you what I've had all the winter—Pansies! About the 1st of November a friend brought me a bouquet of cut Pansies. I put them in a vase of water, in which they have budded and blossomed all winter. They are now full of buds, and one dear little Pansy, and not so small either, fills my sleeping room with fragrance, so delicate yet so charming."

Daisies for Window Boxes.—Few early-blooming plants equal double Red, Crimson, and White Daisies for outside window-boxes at this season of the year, and when planted in stiff, loamy soil and well watered, they continue to throw up fresh foliage and flowers until even the beginning of June; unlike many other spring-blooming plants, too, they withstand the effects of London smoke. Anemones and Daffodils also make effective window-boxes, but their beauty is short-lived compared with that of the Daisies.—B.

THE KITCHEN GARDEN.

SWEET FENNEL OR FINNOCHIO.

The Common Fennel (Fœniculum vulgare) is a vigorous, perennial, umbelliferous plant, a native of Central and Southern European districts of the Mediterranean regions, and naturalised in England, where it is sometimes found in chalky spots. According to the soil and climate the Common Fennel rises to the height of from 3 ft. to 6 ft., its smooth tubular stem bearing elegantly-cut leaves and yellow flowers in summer. In spite of its very strong odour, however, it has long been cultivated in gardens on account of its leaves being sometimes used in sauce and for garnishing dishes. Oil obtained from the seed is very sweet-scented and well known in perfumery, and the seed itself is largely used by chemists, confectioners, and others; consequently, the cultivation of this plant is carried on extensively in the south of Europe. It is easily propagated by offsets in the spring, by division of the large roots, or by seeds, the latter being by far the best way; but the plant will very quickly spread if allowed to bear seed, therefore it should be treated as a perennial, and the flower-stalks cut down as soon as they appear; the stools must be protected against sharp frost. A variety called Sweet Fennel in England, Finocchio in Italy, deserves a special notice as a vegetable. The habit and colour of the plant are the same as those of the common sort, but the stalks do not attain more than 3 ft. in height, and have a large, dilated, bulb-like growth, just above the ground, which constitutes the edible portion of the plant when blanched, and at every branching point on the stems appear similar fleshy knots but smaller and useless. Between the Finocchio and the Common Fennel several intermediate sorts are cultivated in Italy for the same purpose, but they are all of inferior quality to the true Finocchio. It is such a favourite in the south of Italy, at Naples, and in Sicily, that among both rich and poor it is in daily use on every table; and during the summer a dinner would not be considered complete without the Finocchio. Strange to say, however, in the north of Italy the Sweet Fennel is almost unknown; people not used to that vegetable have a strong dislike to it at the first trial on account of its pungent smell and taste, but after a short time a relish for it is acquired. When the plant is ready for use all the leaves are cut back to the blanched part, and the stool taken up, well washed, cleaned, and divided into four parts; the scales can then be eaten either in their raw state with salt and pepper, with meat alone, in salad, or mixed with salad with oil, salt, vinegar, and pepper like Artichoke, or as a sauce for fish, for flavouring soup, for pickling, &c.; but it is most generally eaten with salt and pepper at dessert. Its cultivation presents no difficulty; a light, rich soil being selected and divided in ridges 1½ ft. wide and ½ ft. deep. The seed is sown in March, in drills 1 in. deep; when once established the young plants are thinned 1 ft. apart, kept free from weeds, and freely watered (irrigated if possible) during dry weather. The plants having attained their full development are earthed up about ½ ft. high; a fortnight after, the base of the stalks will be blanched and become sufficiently tender for use three months after sowing. Subsequent sowings are made until July to keep up a successional supply all through the summer. To have this vegetable finely flavoured and as tender as possible it must be grown very quickly, consequently it cannot be grown to perfection in the open ground in England on account of the cold and wet climate; it may, however, be sown in a hotbed and transplanted under glass until the hot weather set in, when it may be transferred to the open ground with every probability of a successful growth. It is very seldom transplanted in Italy, where it is treated as an annual, though a perennial. The seed retains its vitality for from three to five years, and must be gathered and imported from the Continent.—D. Guiheneuf.


The Sweet Fennel or Finnochio (Fœniculum dulce).

New Potatoes in Winter.—M. Telliez, a French horticulturist, has practised a method of growing early Potatoes which has attracted a good deal of attention in France. At digging-time sound and medium-sized tubers are chosen and placed in a position in which they can have plenty of cold air so as to retard their sprouting. In August next year they are planted and grown in the ordinary manner, care being taken to cover them thickly with litter as soon as the frost sets in. Grown in this way M. Telliez states that Potatoes may be dug from the beginning of January right up to April or even May, according to the quantity planted. This is known in this country as Chapman's mode of growing Potatoes—a plan practised at Brentford as far back as 1840.

Conover's Colossal Asparagus.—Allow me to say in reference to this Asparagus, that I can fully confirm what has been stated respecting its superiority over the old variety during its early stage of growth; but as Mr. Grieve says (see p. 415), that it does not maintain that superiority after three or four years' growth, I am anxious to know from those who have grown it for several years whether their experience confirms that fact. I planted several beds of it last spring, and certainly the growth this year is far superior to that in any bed one year planted which I have ever had. But one wants to see the beds daily, and compare the growth with more established beds, in order to note the difference. I did not plant any beds of the old variety under exactly the same circumstances; therefore, comparisons made in the case of a few growths would not be fair. Under ordinary circumstances I never cut any Asparagus from beds until the second year after planting when the plants are three years old, and then only a very little. But if the beds of Conover's Colossal increase in strength as much this year as last, they will be capable of producing a full crop next year, or two years from the date of planting.—G. J. H.

Forced Seakale.—What should be the average height of Seakale when properly forced under pots in the open ground? I am not satisfied with the growth of that produced in my garden; it very soon runs into long thin shoots, having but little substance.—L. L. [The average height of Seakale, when properly cultivated and forced under pots in the open air, should be, when cut, from 4 in. to 5 in. There is often too much fermenting material used in covering the pots to force it; this makes it grow too fast to become drawn, and not to be so succulent as it ought to be. The fermenting material ought likewise to cover only a certain portion of the pots in the beds at the time, so as to have a succession of heads ready to cut at the proper height. For the last two years I have grown and blanched the latest supply of Seakale in the open air in the following way:—At the end of autumn the crowns in the rows or beds of Seakale intended for the late supply are covered up with about 10 in. of dry sandy soil, and in the April and May of the year following a supply of crisp good-flavoured Seakale is cut from them. It is easily seen where to cut the Kale from by the upheaving of the earth; of course, such heads are cut first, and the earth is washed off before they are used. —W. Tillery, *Welbeck.*]

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Rhubarb and Apple Tarts.—At this season Apples have lost much of their flavour, and are not at all agreeable in tarts by themselves. Out-door Rhubarb just coming in is to many too acid after eating that forced indoors. I have just had a tart consisting of Apples and out-door Rhubarb mixed, about half of each, and it was really excellent.—J. Taylor.

Bitter Cucumbers.—I would recommend "G. G." (see p. 429) to give his Telegraph] Cucumbers a couple of thorough soakings with clear water. He may at any time know when they require water by simply cutting off a tendril and tasting it. These are always sweet when the plants are not suffering from want of water at the roots, but as soon as they begin to get dry there the tendrils commence to have a bitter taste, and the drier they get the more bitter the tendrils become and also the fruit.—John Clarke, *Cork.*

Mushrooms on a wall.—Perhaps your correspondent "V." (see p. 429), will favour an unsuccessful grower of Mushrooms with further information concerning the wonderful growth of Mushrooms from the face of a brick wall in Lord Londesborough's gardens?—P. [The spawn penetrated the wall from a bed made against it on the other side about 5 ft. from the ground.]

NEW PLANTS, &c.

Cypella cœrulea is a well-known and very beautiful warm greenhouse plant bearing blue flowers; it is a good addition to the six or eight species already known. Unfortunately its flowers are rather fugacious.—"Botanical Magazine," t. 6213.

Ainsliæa Walkeri.—A slender-habited composite plant from Hong Kong, bearing terminal panicles of bluish-white flowers, its stems, which are erect, being thickly clothed with dark green linear lance-shaped leaves 2 in. to 3 in. in length, and notched towards their apices. It is a weedy-looking plant, unsuitable for decorative purposes.—"Botanical Magazine," t. 6225.

Dracocephalum altaiense.—A beautiful hardy perennial, of erect dead Nettle-like aspect, having oblong crenate leaves of a bright green colour, and axillary clusters of large tubular flowers, of a dense Gentian-like blue colour, spotted or dotted with red in the throat. It has long been known in this country, and was figured in Sweet's "Flower Garden," ii., t. 57; "Gartenflora," t. 855.

Hypoestes aristata.—This pretty South African shrub bears opposite bright green ovate leaves and axillary clusters of bright rosy-lilac flowers towards the apex of the branching stems, the upper petal being distinctly spotted. It bloomed with Messrs. Veitch & Sons in 1874, and grows from 2 ft. to 3 ft. in height; but, for decorative purposes, small plants are best.—"Botanical Magazine," t. 6224.

Allium anceps.—This pretty little purple-flowered Californian bulb, found on the Sierra Nevada portion of the Rocky Mountains, flowered with Messrs. Veitch and Sons in May, 1875. Its flowers, which are stellate, are arranged in dense semi-hemispherical heads, at the apex of flattened ancipitate scapes, from 4 to 6 in. in height. It is said to be quite hardy in this country, and it certainly deserves culture on dry warm soils.—"Botanical Magazine," t. 6227.

Dendrobium fuscatum.—A tall-growing, erect-habited species from the Eastern Himalayas, somewhat nearly related to D. chrysanthum. Its flowers, which are orange-brown in colour, are borne in pendent, eight to fifteen flowered racemes, from near the apex of the leafy stems. The lip is densely papillose in front, and of a deep orange-yellow colour, having two conspicuous crimson blotches, one on either side of the disc. The plant is a showy one, and well deserves culture where Dendrobes are grown.—"Botanical Magazine," t. 6226.

Odontoglossum Insleayi leopardinum.—The old O. Insleayi has long been known in gardens as an attractive winter-blooming plant, its main attraction being a very bright golden yellow crimson-dotted lip. This new form, however, has much deeper and brighter coloured sepals and petals than in the old variety, the bars and blotches being of a rich cinnamon-brown colour. It is one of M. Roezl's discoveries in Mexico, and has been distributed in this country by Messrs. Backhouse & Sons, of York. It is a distinct and well-marked plant, well worth culture.—"Gartenflora," t. 856.

Sedum pulchellum.—This is a pretty, slender-habited, North American plant, and is popularly known as the "Bird's-foot Sedum." Its slender stems are 8 in. to 10 in. in length, clothed with short fleshy leaves about an inch in length and hastate at the base. The inflorescence is branched, the four-petaled flowers being of a delicate rosy-lilac colour, having deep reddish-brown stamens. It must not be confounded with S. sexangulare and S. Lydium, two plants which, we are told, are not unfrequently grown for it in English gardens. It is a graceful and most desirable plant for rock-work or the wild garden.—"Botanical Magazine," t. 6223.

Moore's Rural New Yorker.—There is much evidence of great horticultural progress in America, which must be welcome to lovers of gardening everywhere. Thus we see that popular journal, "Moore's Rural New Yorker" becoming more and more devoted to horticultural pursuits, and now Mr. A. S. Fuller and Mr. E. S. Carman, two horticulturists of the best school, are appointed Editor-in-chief and floricultural Editor. Mr. A. S. Fuller is the author of the always interesting and instructive "Diary of Rural Life" (mostly, however, concerned with gardening), which has long been one of the best points in the journal. Mr. D. D. T. Moore, who founded the journal, now retires through ill-health. We believe that the influence of two such able horticulturists, exercised through so widely circulated a journal, cannot fail to have a healthy effect on the progress of our art throughout what we believe is to be horticulturally, as well as otherwise, the "Greater Britain" of the future.

SOCIETIES AND EXHIBITIONS.

ALEXANDRA PALACE.

MAY 5TH AND 6TH.

AMONG plants shown on this occasion the Roses in pots from Mr. Charles Turner, of Slough; Messrs. Lane & Son, of Berkhamsted; and Messrs. William Paul & Son, deserve especial notice. Those from Messrs. Lane, although not large specimens, were unusually fresh and beautiful. Mr. B. S. Williams contributed several groups of select Ferns and ornamental-foliaged and flowering plants, among which we remarked a fine specimen of Aotus gracillima, an old greenhouse plant now rarely seen at exhibitions. It has long, gracefully-curved, Hovea-like branches, clothed with dark Epacris-like leaves and closely-arranged orange-yellow flowers. It well deserves culture, either for ordinary decoration or for purposes of exhibition. A plant of Eriostemon cuneatum, in the same group, was much admired, being fully 5 ft. in diameter and covered with white star-like flowers. Messrs. Cutbush & Sons, of Highgate, staged, among other plants, a pan of the old dark-leaved white-flowered Primula Monroi in capital condition. This is a very beautiful species, and one well worthy of culture by all lovers of hardy herbaceous plants. Mr. Charles Turner sent an attractive group of Show Pelargoniums and a select collection of Alpine Auriculas. From Mr. Ware, of Tottenham, came a collection of Pansies.

Certificates of Merit.—These were awarded to the following new florists' flowers:—

Auricula Chas. Lidguard (C. Turner, Slough).—A very attractive Alpine variety, described in our last week's issue.

Auricula Wm. Bragg (C. Turner).—A distinct-looking Alpine variety, with extremely dark crimson, almost black flowers, having a rich golden-coloured eye. It is a "pin-eyed" variety, but is none the less attractive on that account. We were glad to see this absurd distinction broken down publicly for the first time, especially in the case of a variety so distinct and beautiful as this was.

Azalea indica var. Apollo (C. Turner).—A large white-flowered variety, having greenish spots on the upper petals, and irregular scarlet streaks. It is very floriferous, but not any advance on existing kinds.

Pelargonium grandiflorum var. Gipsy (C. Turner).—A compact habited variety, having dark velvety crimson-scarlet flowers, the upper petals being nearly black, margined with vermilion.

P. grandiflorum var. Diplomatist.—A robust and free-blooming kind, having bright rosy-scarlet white-eyed flowers of good form, the upper petals being of a rich velvety-crimson, nearly black colour, edged with vermilion.

The classes were not well filled as a rule, but all traces of thinness, owing to the paucity of exhibitors, were removed by the excellent groups of decorative plants from the collection of the Palace Company, which were disposed in various parts of the Great Hall with excellent effect. A list of the prizes awarded on the occasion will be found in our advertising columns.

OBITUARY.

LOUIS VAN HOUTTE.

WE announce with much regret the death of the most famous horticulturist in Europe, M. Louis Van Houtte, of Ghent. News of this only reached us a very short time before going to press, so that our present notice must be brief. M. Van Houtte's life and labours must be of great interest in relation to horticulture, and we hope to give them proper notice in due time. It is scarcely necessary to inform our readers that Van Houtte was the principal nurseryman in that city of nurserymen, Ghent—that with his nursery was for a long time incorporated a national school of horticulture, which was an excellent training school for young men. He was also in early life, we believe, distinguished as a botanical traveller; and he was an enthusiastic lover of plants, apart from monetary considerations. His establishment at Ghent was universally allowed to be the finest of the kind in Europe. He was the editor and proprietor of that excellent magazine, the "Flores des Serres et des Jardins de l'Europe." Ailing for a long time past, his desire to see his friends and their plants at the late Brussels Show led him, against the advice of his friends, to make the journey from Ghent to Brussels, which it is supposed accelerated his death, which occurred in his sixty-sixth year, on Tuesday last, the 9th instant.

MR. WILLIAM CUTBUSH.—We have also to record the death of Mr. Wm. Cutbush, nurseryman, Barnet, which took place on the 4th instant, somewhat suddenly, at Brighton, where he had gone for the benefit of his health. For many years he was a conspicuous exhibitor at our great London shows. He was well-known and highly-esteemed by a large circle of friends, to whom his death is a sad loss.

Notice.—A constant reader who sends blooms of Adonis vernalis, "J. H." "L.L." "Wycombe," and others are reminded that we never name plants unless the full address of the sender be given. The printed name of a plant can be of no interest to any but the person who sent it, and therefore we always reply by post upon receiving the address. The Camellia sent by a correspondent, whose address has been mislaid, is C. Corallina, a kind sent out some years ago by Mr. Chandler.

No. 235.] SATURDAY, MAY 20, 1876. [Vol. IX.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

THE RAMANAS ROSE A CONTINUOUS BLOOMER.

In reference to Rosa rugosa, well figured in No. 234 of The Garden, I write to draw attention to a character of the plant not alluded to in the article accompanying the figure. With me this Rose continues to produce flowers on the young wood from the end of May to October or November, when it is checked by the autumn frosts. This is an important character, and should be held in much estimation by those who may feel inclined to use the Rosa rugosa as a good species with which to try experiments, by crossing it with other species or varieties of the Rose. The plant of the original pink-flowered variety is from 3 ft. to 4 ft. high, bushy, and during the summer densely covered with its beautifully corrugated and dark green leaves. It grows in a cool situation, facing the north, planted in a mixture of rich loam and bog, and within a few feet of a tall wall, running east and west. The flowers are produced very freely, sometimes singly, but often in clusters, on the strong shoots. From this bush I have measured flowers 4 in. in diameter, and I find that its large and handsome fruit generally contains a considerable number of perfect seeds. Much has been said and promised about perpetually flowering Roses, but very few are so among those called Hybrid Perpetual, most of which only produce a few flowers during the autumn. To obtain a race of really perpetual Roses, with large finely petaled flowers, meeting the critical requirements of the Rose grower, is still a desideratum, but we should not be satisfied there, as I feel by patience and careful crossing we shall have the large and fine flowers, ere long, combined with rich perfume, large, glossy evergreen leaves, and the bushy as well as the rampant growth. Is it asking too much of horticulturists to try and produce such Roses as I have sketched out, seeing what they have already accomplished in the improvement of the Rose, and knowing, as they must well do, that Roses are now easily to be had, which have one or more of the qualities upon which I set store. The white variety of Rosa rugosa I grow, thanks to Mr. Ware, of Tottenham, but my experience of it is limited. It is now producing leaves freely like those of the original species, and they appear to be of the same beautiful character.

W. W. S.

Worthing.

DOUBLE DAISIES.

As "A. D." (see p. 428) asks for a little more information on this subject, I will attempt to furnish it. In the first place, I think that the naming of Daisies, otherwise than calling them red, white, quilled, or the reverse, is simply ridiculous; every nurseryman, indeed, seems to give them names of his own; for only last season I received the old Mottled Daisy under the name of the Prince of Wales. I grow Daisies extensively, and perhaps have, scattered over my garden, some thousands of them of all colours now in full bloom, and were they to be at once removed, a serious blank would be the result. I believe I have grown from twenty to thirty tolerably distinct Daisies, double and single; and, if "A.D." will communicate with me, I think I could add to his collection. Having alluded to the old Mottled Daisy, I may say that it is the earliest and the hardiest of all Daisies. I saw masses of this, or a similar Daisy, at Battersea Park a few seasons ago, but it was not at all effective; none of the grey Daisies are so, except when contrasted with the old blood-red kind. I possess a very superior double-quilled sort of this colour, which was sent me under the name of Defiance. Of pink Daisies, including flesh or rose coloured, there are many fine kinds, both quilled and flat-petaled, and owing to some of the latter having incurved centres, the under sides of the petals are brought up, thus giving the flowers a pretty two-coloured appearance. I have "A. D.'s" ranunculoides or ranunculiflora, a kind of no great merit. I possess a charming rose or pink quilled Daisy of medium size, which I consider the most perfect quilled kind known, being good in every point. I know nothing of its origin; it seems to come nearer to "A. D.'s" pink Queen than anything else with which I can compare it. My best white Daisy is a very large, entirely white variety with flat petals; this, however, shows the centre late in the season. I take it to be the Giant White. A visitor, on seeing it the other day, remarked that it looked more like a Dahlia than a Daisy. I bought it the other day, thinking it was something new, under the name of Dickson's White. The Large Quilled White is a fine kind as far as size is concerned, but owing to its being quilled, it is dull in colour. I have, or had, what I take to be "A. D.'s" Queen of Whites, a globular Daisy—in fact, a perfect ball. I have also a miniature white Daisy, quilled with a tinge of blue or purple. These miniature Daisies make neat edgings. In addition to the above, I have many promising seedlings. The red Daisies are perhaps the most effective of all, but a flat-petaled red Daisy is still a desideratum. I have all "A. D.'s" red kinds except the one called Bacchus, at least, I do not know it by that name; but I have a very fine crimson of this class, named by the sender—Mars, the latest blooming Daisy with which I am acquainted. The old Crown Daisy is much cultivated in cottage gardens in Lancashire, where, in damp soils, it grows to an enormous size; but it does not associate well with any other variety. I quite agree with "A. D." that the kinds called New Victoria Daisies are in no wise better than the old Crown, nor yet equal to it; indeed, I have discarded the whole of them. There is a blue-coloured Daisy (Bellis rotundifolia cœrulea), but I have not seen it. Those who wish to grow Daisies in perfection should divide them every year, not later than August, as single crowns produce by far the strongest blooms. They like a rich damp soil, and will bear gentle forcing, that is, they may be forwarded in a cold frame; and pans, or shallow baskets, furnished with from one to three dozen various kinds tastefully mossed over are charming objects in February or early in March. The combinations that may be effected by means of these hardy early flowers are endless. Certainly no plants furnish even the worst gardens with such a mass of permanent colours in the earlier part of the season as Daisies, and nothing but prejudice prevents them being planted in our squares and parks by the million.

Thos. Williams.

Bath Lodge, Ormskirk.

SELECT CROWFOOTS.

There are many worthless and weedy subjects among Crowfoots, but we may pick out several choice gems which should be seen in every collection of hardy plants. Taking them alphabetically, we come first to Ranunculus aconitifolius, a kind with single white flowers, which grows 18 in. in height, and is of graceful habit. The double form (known as Fair Maid of France) is more commonly seen, and is a pretty plant, with double white Camellia-like blossoms. R. acris flore-pleno (the old Bachelor's Buttons of cottage gardens) is another useful border plant, with double yellow flowers. Of quite a distinct habit is R. amplexicaulis, a species with smooth, glaucous, undivided leaves, and pure white flowers with yellow centres; it is a most beautiful plant; it grows about 9 in. in height, and prefers a cool sandy loam. R. bulbosus flore-pleno is of about the same stature as the last, with double yellow flowers; its leaves are three-lobed and much divided. R. bullatus is a fine showy plant, and was mentioned in The Garden of last week under the name of R. speciosus. It does not grow more than 6 in. in height, and has large, double, orange-yellow flowers, very like those of the double-flowered Marsh Caltha; it also goes by the name of R. grandiflorus. R. glacialis, an Alpine species, does not grow more than 3 in. or 4 in. in height, and requires some little care in cultivation, doing best in light gritty soil kept moist during the heat of summer. When in good condition its pretty white flowers produce a very pleasing effect. R gramineus, another useful subject worthy of a place, has Grass-like leaves and yellow flowers about 1 ft. in height. R. montanus makes a good dwarf companion for R. glacialis, though it grows more freely in any light soil. It is a pretty little yellow-blossomed plant. R. parnassifolius has Cyclamen-like leaves, roundish heart-shaped, and flowers resembling those of R. amplexicaulis. Though a beautiful plant I have always found it a very ticklish subject to deal with, and difficult to keep: at present I regret to say that I have not a single plant of it. R. Gouani is a vigorous and showy subject, with large, glistening, yellow flowers; it grows about 18 in. in height, and makes a useful addition to the second line of the mixed border. R. rutæfolius has (as its name implies) very much divided Rue-like leaves, and white flowers with dark yellow centres. As it comes from the highest parts of the Alpine ranges near the snow limits, it probably requires the same treatment as other high Alpine plants, though I have found it do fairly well in the mixed border in light soil, with a few flints plunged about its roots. R. Thora is a distinct kind with yellow flowers; it grows 9 in. high, and has pale green leaves, shaped like those of the Coltsfoot; R. uniflorus, a pretty little plant with white flowers and deeply divided leaves, is worthy of a place in the front line of a mixed border. I have had many other varieties of the Ranunculus tribe, but have discarded all but the above, owing to their weedy appearance and similarity of bloom to that of the common Buttercup. Those just mentioned will be found worthy ornaments of every collection of herbaceous plants, and they nearly all succeed perfectly in ordinary borders. OXON.

TRIAL OF FUCHSIAS AT CHISWICK IN 1875.

These were grown under glass, and consisted of young plants shifted on into moderate-sized but rather small pots. The following, which were examined just when they had reached their best condition as to bloom, received first-class certificates.

I.—Whitish tube and sepal; red or purple corolla.

1. **Annie** (Veitch & Sons).—Of rather bold growth, but dwarf in habit. Flowers with short blush tube; reflexed, flesh-coloured sepals, and large, open, carmine-red corolla. A free-flowering sort.

2. **Brilliantissima** (E. G. Henderson & Son).—An erect-habited rather vigorous-growing variety. Flowers with a greenish-white tube, reflexed sepals, and a dark crimson corolla; very fine in colour, but rather small. Certificated on account of the habit of the plant, which was excellent; in the way of the variety called Lustre, but superior to it.

3. **Josephine** (E. G. Henderson & Son.)—A variety of dwarf and stocky but rather vigorous growth. Flowers with long blush tube, and short reflexed sepals, and bright rosy-pink corolla.

4. **Marginata.**—Of free bushy habit, and a free bloomer. Flowers with short blush-white tube and reflexed sepals, and a rosy-tinted corolla with crimson margin.

5. **Schiller.**—A finely-shaped, free-growing, bushy plant, of drooping habit. Flowers with a blush tube and spreading sepals, and a purplish corolla. The flowers are larger and better than those of Rose of Castile, which they resemble in colour. The habit is excellent.

6. **Starlight** (Veitch & Sons).—A free-growing and free-blooming variety of excellent habit. Flowers large, with long white tubes and sepals, and long, bright, rosy-lake corolla. One of the very best of the pale-coloured species.

7. **Water Nymph** (E. G. Henderson & Son).—A dwarf, free-growing, bushy-habited variety. Flowers with blush tube and straight sepals, and a crimson corolla. A very desirable variety.

II.—Scarlet tube and white corolla.

8. **Alexandrina** (Veitch & Sons).—A slender, drooping, free-growing, and exceedingly bright and attractive sort. Flowers with short bright red tube and reflexed sepals, and a fine white corolla.

9. **Mrs. E. Bennett.**—A free-blooming, free-growing, erect-habited variety. Flowers with very short red tube and long spreading sepals, and a very large spreading white corolla. Very distinct and fine.

The certificates already awarded to the following varieties in this section were confirmed—namely, to Conspicua, Puritani, and Pursuit (singles), and to Enchantress (double).

III.—Scarlet tube and purple corolla.

10. **Empress of Germany.**—A variety of dwarf, bushy habit, dense, free-flowering, and ornamental. Flowers with a short tube and reflexed sepals of a coral red, and a large, spreading, purple corolla.

11. **First of the Day** (E. G. Henderson & Son).—A variety of a dense, bushy, free-flowering habit. Flowers with a short coral-red tube, small reflexed sepals, and a large, bold, purple corolla.

12. **Inimitable.**—A variety of dwarf and free habit and ornamental character. Flowers medium-sized, with a coral-red tube and spreading sepals, and an expanded, violet-purple corolla reddish at the base. It is something in the way of Empress of Germany.

13. **Wave of Life** (E. G. Henderson & Son).—A variety of weak and drooping but dense habit of growth. Flowers with short tube and broad reflexed sepals of a brilliant coral-red and a large, long, spreading, dark purple corolla.

In this group the certificate previously awarded to Commander and to Noblesse were confirmed.

IV.—Scarlet tube, double purple corolla.

14. **Champion of the World** (F. & A. Smith).—A loose-habited variety, with long weeping branches, and well adapted for furnishing a pillar or rafter in a greenhouse. The flowers are immensely large and full double; the tube and sepals coral-red, the latter tipped with green; the corolla purple, expanding to nearly 2½ in. in breadth. It is the largest-flowered of all the double red Fuchsias.

15. **Mr. Lyndoe.**—A free-growing variety with very large flowers, of which the sepals are erectly reflexed, and of a pale red, and the corolla bold but somewhat irregular, and of a deep purple.

16. **Prince Leopold** (Veitch & Sons).—In this variety the plant is of a bushy, drooping habit and free. Flowers with a short tube and reflexed sepals, and a dark purple, compact, double corolla.

17. **Triumphant** (Veitch & Sons).—A variety of rather spreading growth, and tolerably free-flowering, altogether an exceedingly promising sort. Flowers with a slender tube and erect palish red sepals; the large, full, dense corolla of a rich deep purple. The individual flowers are exceedingly fine and well formed.

Of this group the variety named Marksman had the previous certificate confirmed.

V.—Pink tube and purple corolla.

18. **Hugh Mollen** (Veitch & Sons).—A variety of free and vigorous but bushy, drooping habit, well adapted for furnishing a pillar or rafter, being not only showy but distinct in character. Flowers large, with a long, slender pink tube and spreading green-tipped sepals, and a bold and spreading purple corolla. A very effective, ornamental variety.

VI.—Variegated leaves.

19. **Aucubæfolia** (E. G. Henderson & Son).—A very ornamental variegated-leaved variety, having greater merit from this point of view than from that of its flowers. The leaves have a large creamy-white and conspicuous central blotch, and when this variegation is well marked the plant is very handsome; but it is a form of variegation very apt to run out unless care be taken in the selection of cuttings. The flowers are freely produced, and have a long red tube and sepals, the latter not being spread out or reflexed. The certificate was given for the variegation.

20. **Sunray** (G. Smith).—A beautifully variegated Fuchsia, the finest yet sent out, with red, variegated foliage, which is quite ornamental. The flowers have red tubes and sepals, and a purple corolla. It was certificated for its variegation. T. MOORE.

SUMMER TREATMENT OF CHRYSANTHEMUMS.

WITH the month of May active work begins amongst Chrysanthemums; early-struck cuttings should now be in 8-in. or 9-in. pots and making rapid growth. If it be desired to grow handsome specimens with fair-sized blooms as well, the plants should be stopped until from eight to twelve stems are obtained, according to the variety and strength of each plant, each stem so produced being allowed to grow on and to bear a single flower. Search the plants carefully for green fly, which is sure to appear sooner or later, and apply a solution of soft soap to destroy it. Great care should be taken that the solution is not too strong or the young shoots will be injured, and it is always better to repeat the dose frequently than by one overdose to risk the year's prospects. The health of the plants is much improved by syringing them after a hot day; and, indeed, the surface of the ground all round them should always be kept moist in dry weather. An occasional syringing with weak soot-water is very beneficial. When the plants have been put into their blooming-pots it is very desirable that they should be partly plunged, but plunging is not of such importance before that, as of course, not having been allowed to become pot-bound, the roots run less risk of being burned. My practice is to set the plants in the sized pots in which they are next to be potted, which of course shades the inner pot from the sun. To grow Chrysanthemums properly they should stand in as open a situation as possible, where they will have the sun all day, but it is most important that they should be sheltered from strong winds. The soil should consist of turfy loam, which may be used quite fresh, with a fourth or fifth part of horse-manure. In order to prepare the manure, it should be collected fresh from the stables until as large a quantity as is needed to pot all the plants in their blooming-pots is obtained; it should then be thrown into a heap and left until the violent heat has passed off, when it should be worked through a sieve until it is quite fine, in which state it is fit for use. For previous pottings, ordinary old hot-bed manure will answer, but the other should be used for the final potting, as it will produce the finest blooms. When the manure has been properly mixed with the soil, the compost has, to the touch, a sort of silkiness, and is admirably suited for the fine roots of the Chrysanthemum. The following are a few of the finest sorts in the large flowering section:—Golden Queen, Queen of England, Jardin des Plantes, Golden Beverley, White Beverley, Empress of India, Guernsey Nugget, Abbé Persaglia, Progne, Glück, Lady Talfourd, Golden Ball, Venus, Prince of Wales, and Lady Hardinge. B. H. Margetts.

Finedon, Wellingborough.

Mossy Saxifrage.—Is the plant thus termed, which has been recommended in The Garden for beds in which bulbs are planted, the same as the plant sometimes called "Dovedale Moss," in consequence of its growing wild in Derbyshire, in the well-known picturesque locality of Dovedale? I have one species of this so-called Moss, the flower of which is white, and two or three blossoms are borne on one stem; and after flourishing for a year or two over stones which border a flower bed, it seems to die off. There is one of similar appearance but with much larger flowers, which in some localities grows so rapidly that there are annually sufficient clippings to plant many beds (at least such is the account given of it to me by a friend). Any information respecting the Mossy Saxifrage recommended in The Garden for bulbs would be of much service to the inquirer, and also whether it is intended to be for a permanent bed with the bulbs, or to be removed when they are removed?—Ll. [The plant referred to by this name in The Garden is usually Saxifraga hypnoides, or one of its numerous forms or allies, of which there are many in cultivation. They are all very hardy, but sometimes old tufts perish—usually from drought. It may be employed for permanent beds or otherwise; it grows very freely, and is increased by division. The tufts are sometimes full of rootlets above ground; therefore it is easy to increase the plants by pulling the green part to pieces and planting them immediately.]

Pelargonium inquinans "Old Giant."—Twenty years ago this, at that time, popular plant used to be trained on the back walls of greenhouses and conservatories. It blooms constantly and freely if planted in a sunny situation, and attains a height of from 15 ft. to 20 ft., the stems being as thick as one's thumb and the foliage proportionately large; the flowers, which are vivid scarlet, are borne in immense trusses. Of this I recently saw a specimen in Mr. Heriot's conservatory at Highgate, where its habit of blooming perpetually is much appreciated. Cuttings of it taken off during the summer root and grow freely, and if standard or pyramidal grafted plants be desired, this makes the best of all stocks on which to place the more delicate varieties.—B.

Hardy Evergreen Ornamental Climbers.—This class of plants is comparatively rare, and I have often been surprised that the beautiful evergreen creeper, by some persons called Smilax, which grows wild in such profusion on the shores of the Mediterranean in many localities, and especially near Nice, has not been introduced into British gardens, whereas it seems to be almost unknown. Its leaves resemble those of the Holly in texture and polished appearance, and some plants have many more prickles than others, and there is also a difference in the form of the berries, which are always bright scarlet. It grows between rocks and stones in apparently exposed places, and in poor soil; but it is a most beautiful plant, and if cultivated, might possibly be rendered available for growing up trees as well as walls; but in its native state it falls over small bushes or rocks in large masses. Some berries of it which I brought to England became mouldy, and never germinated.—Ll.

New Zealand Flax in Flower in Scotland.—A large plant of New Zealand Flax (Phormium tenax) is now in bloom at Mayfield, Falkirk, and I have every reason to believe that it will ripen seed, for a number of the flowers remain firm on the plant. The stem is about 9 ft. high and very strong, bearing from 250 to 300 flowers about 3 in. long and 1 in. wide; the petals are white, and the sepals dark brown; the pistils and stamens rise nearly an inch above the petals, and the stamens are thickly laden with pollen. Its general appearance is striking and majestic. It is the best specimen of New Zealand Flax that I have ever seen in Scotland.—A. Lorlie.

THE KITCHEN GARDEN.

SEED-SOWING IN WET SEASONS.

It is never advisable to go upon ground when it is wet and sodden; but when seed-time properly so called is about ended for the season, and the ground is still wet, such considerations have to be put on one side, and one has to adapt his practice to the exceptional state of things. To tread Onion ground when the soil is the least wet is the height of indiscretion, for it causes it to bind like clay, and when dry weather sets in it becomes a network of deep fissures, and it is altogether in a most unsuitable condition for the plants, which never come away or grow as they should. The most miserable crop of Onions I ever saw were sown under these conditions. This season I simply turned the ground over with forks, and afterwards scuffled the surface over with wooden rakes to level it, drew drills, sowed the seed, and covered it over by hand with dry soil from the sheds, leaving the finishing touches with the rake to be done in dry weather. Raking the surface of a seed-bed when the soil is wet is worse than digging it in that condition, for it rolls it into nodules, which the first shower of rain runs together into so impervious a crust that the seed cannot push its way through. The vegetable that suffers more than any other, however, when sown in a cloggy soil and covered in with the same material, is the Turnip. The young plants come away sluggishly, and are almost sure to fall a prey to the fly. Under such circumstances the sowing should be done as the ground is dug, no raking should be attempted, and the seed should be covered by hand, like the Onion, with dry light soil of any kind. Treated in this way they do well enough, and the ground can be stirred deeply between the rows on the first favourable opportunity. All small seeds, such as those of Lettuce, should be treated in the same manner. Peas and Beans should just have the soil drawn over them as sown, without any raking or patting. French Beans, if the soil be heavy, do much better if covered like Turnips; so also does Beet, and indeed any large seeds that do not need to be covered deeply. After the crops are fairly above ground, the adverse conditions of seed-time may be greatly compensated for by surface-stirring, doing it deeply with the hack or Dutch hoe, and when practicable by mulching. I have had to deal with soils so heavy and tenacious that they never "fell" kindly during the whole summer, if the ground were dug when wet; the sun simply baked the clods into lumps like pieces of brick. Planting any of the Cabbage tribe in such a soil was a difficult operation, and they made little progress for weeks afterwards, unless mulched with some loose material such as short Grass, which is always plentiful, when they did not appear to suffer much. There is less to be feared, however, with the seed-bed in wet seasons than with those crops which require transplanting. The roots of seedlings find their way into the soil when once they get a start; but transplanted subjects take most unkindly to the ground when the soil is lumpy and wet. Cauliflowers are almost sure to "button," Lettuces to "bolt," and few things do well. Moving with good balls in all cases, and planting without squeezing the soil about the roots, and surface-stirring with the hoe afterwards, is the only plan. I am, of course, not speaking of soils which after a period of drought have just been soaked with a good fall of rain, for then the soil is in the best condition for planting, but of soils, and particularly heavy ones, which are in a state of saturation. Chef.

RHUBARB CULTURE.

Rhubarb will grow on many kinds of soil, but the richer and deeper they are the finer will be its quality, and the larger its size. The situation should also be moderately dry, or made so by drainage. It will grow in clay, peat, or the bog-earth of the Fens. Perhaps, had it a choice, it would elect, like most other garden plants, a turfy loam, leaning to clay rather than sand. When the leaves get fairly into growth, it needs some strong stimulant to keep them going. The larger the leaves of one season the stronger will be the crown for the next; hence the importance of rich feeding all through the growing season. It is a good plan in small gardens to plant Rhubarb near the depôt for house sewage, so that it may be nourished with strong waters as well as rich solid manure; 4 ft. at least, of a rich root-run should be provided for it. For new plantations the ground should be thoroughly trenched, and the manure carefully incorporated with it. Its productive force should be kept up afterwards by an annual dressing, from 4 in. to 6 in. in thickness. No plant is more easily increased and multiplied than Rhubarb; plants of two or more years old seed freely if permitted to do so. Unless seed be required, however, they should not be allowed to do so, as seed-bearing weakens the crowns. The seeds ripen about the end of September, and may be sown at once in shallow drills a yard apart, or they may be sown in February. As soon as they are well up, thin the plants to 18 in. or 3 ft. asunder, according to the size of the plant and the intention of the cultivator. If intended to remain where they are, a yard apart is close enough—indeed, too close for the Victoria variety. Some, however, prefer rows 2 ft. apart, and thinning the plants to 1 ft. only the first season; then in the October or February following fresh ground is prepared, and the Victoria transplanted at distances of from 4 ft. to 6 ft. by 4 ft., and the Defiance 3 ft. by 18 in. or 2 ft. The best plan is to sow Rhubarb where it is to remain, as it forms immense roots that are easily broken, and to break is to injure more or less. Nevertheless, a very common mode of propagating Rhubarb is by root division. The huge stool or fleshy root is sliced into as many portions as there are crowns to it with a sharp knife or spade, and each slice forms a new plant. This is rather a barbarous mode of increase. Gathering Rhubarb, and when to cease gathering, are operations which require more attention than they generally receive. In gathering, the proper method is to give the leaf-stalk a twist outward, and a sudden jerk down at the same moment. From want of attention to this, many tear off the crown with the base of the leaf-stalk. Again, too many leaves should not be gathered at once. If a plant have only a dozen leaves, do not gather more than six of them, and let these be the lowest. As to the age of the stalk, that depends a good deal upon taste. Some prefer Rhubarb when the leaves are freshly unrolled, others when they are half-grown, and others when they are fully grown. Of course there is great waste if the stalks be gathered before they have reached their full length. I think Rhubarb is at its best just when the leaf has reached full size. It can hardly be too old for preserving, and is seldom gathered till the end of August for that purpose. As to the time of ceasing to gather Rhubarb, it should certainly be not later than August if the gathering is to be annual. This leaves but little time for the last leaves to ripen a crop of good crowns for the next year's crop, all the leaves removed have doubtless been a loss to the plant: they did much to weaken and nothing to strengthen it; it is only the leaves left on that recoup it for its loss in those taken off. Hence the importance of rich food to replenish the plant, and time for the maturation of the later growth; and I need hardly add that no weed must be permitted to grow at the expense of the Rhubarb plants. Grown as here briefly set forth, perhaps no crop yields a heavier or more profitable return than Rhubarb. D. T. F.

Planning a Market Garden for Horse Culture.—A market gardener writes to the "Evening Post" as follows:—Much labour may be saved by arranging the garden in long, narrow beds, running north and south, instead of irregular and dispersed patches. The fruit trees should be placed in rows so disposed that they, as well as other rows, can be cultivated readily and easily by horse and hand machines, of which there are several excellent ones. When thus arranged the garden can be well ploughed and harrowed by one horse without injury to the fruit trees or beds of permanent vegetables or herbs. It will be found very convenient to have broad plats of Grass at each end of the garden upon which the horse may be turned. These should be kept closely shaven with a lawn mower. Most of the sowing and planting may be done with a hand-drill, which, with arrangements to enable it to be used a weeder or a cultivator, can be procured for a small sum. These implements are a great relief to the labour of gardening, and prevent the necessity of much stooping.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

A Good Late Broccoli.—Where a really good late Broccoli is wanted both for size, colour, and flavour, Petersfield Late should be largely grown. It is dwarf in habit and one of the best self-protecting kinds with which I am acquainted. The colour now is as white as that of any Cauliflower. It is an excellent variety, and equally late as Eclipse, which forms a good companion to it, but it is neither so white nor yet so self-protecting.—A. H., *Thoresby Gardens.*

Conover's Colossal Asparagus.—Like Mr. Peter Grieve (see p. 418) I find this to be more prolific than the common variety, and to be a year in advance of it when raised from seed. I had a small bed of it sown here on the 1st of May, 1874, on land which had only been prepared in the usual way for crops in general. Nevertheless, on the 1st of this month, I cut some good heads of a beautiful deep green colour. Conover's came in before the common kind with me this year.—G. Noakes, *Mountfield Court.*

Wood's Selected White Cape Broccoli.—Cape Broccolies have lately fallen into disrepute, but I find this one most serviceable for autumn use. Care should, however, be taken to sow it at a certain time, for, if sown too early, the produce is comparatively worthless. I generally sow a small bed of it the third week in May, and another the first week in June, and transplant, as soon as the young plants are large enough, to sheltered borders on which early Peas or Potatoes have been growing. Its heads are of medium size, solid, and beautifully white—quite equal, in fact, to those of Cauliflower—and in September and October they form a valuable addition to our list of choice vegetables. —J. Groom, *Henham.*

NOTES OF THE WEEK.

—— For some time past Mr. Noel Humphreys has been at work on a series of drawings of Alpine flowers—fifty in number—and representing the more important types of beauty among these flowers. The work has been a labour of love, and the result is a very charming series of drawings, quite unlike any we have before seen of these or like subjects. The plants are represented life-size and growing on or amid the rocks, cushioned in Moss or associated with their fellows. The whole established growth of the plant and its blossoms is shown, and not merely sprigs or flowers. The drawings are now mounted and arranged in a room in The Garden Office, where any of our readers may see them.

—— The double form of the Ladies' Smock (Cardamine pratensis) is a pretty old-fashioned flower which we notice again coming into cultivation. It was shown in pots at the Aquarium exhibition the other day by Mr. Elliot, and was very pretty. The double Meadow Saxifrage (S. granulata) also formed an effective pot plant.

—— There is a dark blue variety of the Wood Hyacinth grown under the name of Scilla nutans violacea, which is now one of the most beautiful of our hardy bulbs. It is cultivated by Mr. Parker at Tooting, and no doubt in other nurseries, and well merits a place on account of its colour.

—— Gardens round London have not for many years past, at this particular season, looked so woe-begone, or the vegetation so parched and miserable, as during the present week.

—— A fine specimen of the Snowdrop tree is now in very great beauty in the gardens at Syon House. It is odd that such a lovely tree should be so seldom seen in gardens generally.

—— The Rev. Canon Hole informs us that the Roses in pots shown at the Westminster Aquarium this week by Mr. Turner, Mr George Paul, Messrs. Lane, and others, were, on the whole, the finest he had ever seen.

—— Immense quantities of Asparagus are being recived in the London market, both from the neighbourhood of Paris (Argenteuil) and neighbourhood of Toulouse. The Paris "Grass" is the finest and usually blanched; the Toulouse samples are good, and large, and green for some inches.

—— M. Ermens, formerly superintendent of the Paris City Nurseries at La Muette, near Passy, has been appointed Director-General of the horticultural and agricultural works of the Maharajah of Kashmir, and has just left for that famous valley in the great mountains.

—— The various hardy herbaceous Spurges (Euphorbiæ) now in bloom, and mostly at present confined to botanic gardens, are particularly suited for the wild garden, where their distinct greenish-yellow tops would furnish pleasing effects at this season. With a few exceptions they are not so suitable for borders.

—— The rare and beautiful Eritrichium nanum may now be seen in bloom at Messrs. Hooper's, Covent Garden, a singular fact, seeing that it is so scarce in our gardens. It is a charming Alpine plant, closely allied to the Forget-me-nots, for which at first sight it might easily be mistaken. Though little more than 1 in. in height, it is a mass of lovely blue blossoms.

—— The new Odontoglossum vexillarium appears to be the most floriferous of all the species. Messrs. Veitch & Sons have a plant of it now in flower bearing ten strong spikes, and Mr. David Thomson, of Drumlanrig, writes to say that he has a plant of it which has produced thirteen flowers from one pseudo-bulb. Among Messrs. Veitch's plants are several in which the rosy colouring is very soft and delicate, and these are, to our mind, far more beautiful than the darker-coloured varieties.

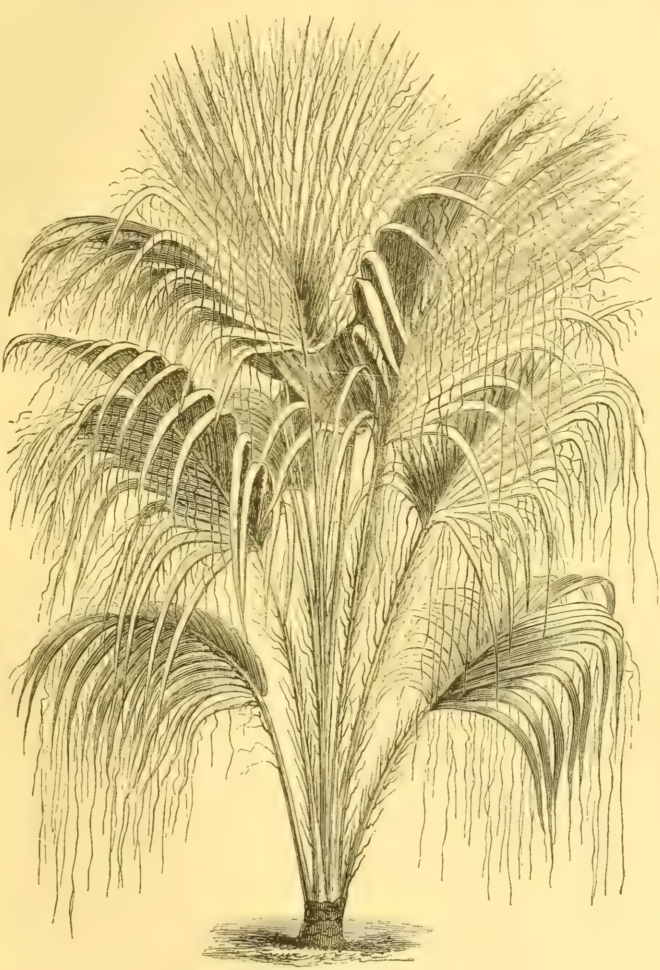
—— A meeting of the Executive Committee of the International Horticultural Exhibition and Botanical Congress of 1866 was held on Wednesday last, May 17, at the Royal Horticultural Society, South Kensington, at which it was unanimously resolved that it is desirable to institute a similar exhibition in London in 1879, provided that a suitable site can be found, and a provisional committee, consisting of the members of the former committee (with power to add to their number) was instituted for the purpose of taking the necessary steps. The meeting was quite of a tentative character, and another will be shortly held for the purpose of eliciting the opinions of horticulturists in general on the subject. The Horticultural Club, 3, Adelphi Terrace, Strand, has offered its meeting-room for the purposes of the committee meetings, &c. The chairman of the provisional committee is Dr. Masters, F.R.S.; the secretary, Mr. Thomas Moore, F.L.S., Botanic Gardens, Chelsea, to whom communications may be addressed.

THE INDOOR GARDEN.

CUT FLOWERS OF CHINESE PRIMULAS.

I FIND these very serviceable during the winter months. We have used them largely during the past season, and I know of few plants that will yield a greater quantity of bloom from a given space. Our earliest sowing is made in the beginning of March, and as soon as the young plants are large enough to handle, we pot them off into pots singly, using a light rich compost. In a moist growing temperature, of about 60°, shaded from bright sunshine, they make rapid progress, and require successive shifts into larger pots as they progress in growth. We give them a final shift into 6-in. pots in June; for, although they may be grown so as to make very large specimens by using large pots, I find the best results from moderate-sized ones well filled with roots. During the summer months, we keep them in cold frames in a bed of coal ashes kept moist, and shaded, as they do not like to be over-watered, but if the drainage be good, there need be little fear of their damping off when well established. All blooms should be pinched off for a time, as soon as they appear, in order to induce the development of lateral crowns, and thus treated when taken into an intermediate house about the end of September, they quickly form large masses of flower, and as specimens for vases few plants are more effective. As small plants are, however, the most serviceable for general decorative purposes, we employ the bloom of the largest plants in quantity, in a cut state, for dinner-table decoration, or for any flat kind of floral arrangement which we may have, as scarcely any flowers look better under artificial light than those of red and white Primulas. A few spikes of them in shallow glass baskets, in connection with any other choice flowers, make a beautiful table ornament. I find the kind called Russel's Pyramid to be an excellent variety for general purposes; although these Primulas grow freely in a cold house, they are much more satisfactory in a temperature of about 55°; under such circumstances they continue to send up a succession of flower-spikes for a long period. Chinese Primulas are largely grown for the London markets, and where that is the case two or three sowings are often made in one season—the first early in March, the second at the end of April, and the third at the end of May. Any time in May will be early enough if they are not wanted in bloom until Christmas; but if required in October and early in November, they must be sown in March, in order to secure good strong plants. To get the seed up successfully market growers adopt the following plan:—They sow in boxes instead of in pans, as is usually done, as it is found that the seed hardly ever comes up round the edges of the pans. The reason is simply this, the pan absorbs the moisture from the soil, and consequently the seed gets dry, and if once it gets thoroughly dry after it has been soaked through, it never vegetates afterwards—a result which has been noticed over and over again. Private growers, who have in general only a small quantity of seed, are apt to sow it in a small pan, the result of which is, in many cases, failure in raising the seed. If sown in a box one does not run so much risk, as the box does not absorb moisture so readily as pans. Some sow on very old rotten manure, at least three or four years old, moistening it before sowing. When sown a little silver sand is sprinkled over it—barely enough to cover it.

J. GROOM.



Pritchardia filifera.

PRITCHARDIA FILIFERA.

THIS Palm, of which the annexed is a representation, is one of the most beautiful of the handsome family to which it belongs. All who saw it at the International Exhibitions of Vienna, Florence, Ghent, Louvaine, &c., will remember its remarkably fine appearance and the admiration which it excited. It grows farther north than any other of the Palm tribe, its native habitat being the banks of the Colorado, in the province of Arizona, in New Mexico, where it bears the winter frosts without injury. It is excessively graceful in appearance, long white filaments falling from its palmate leaves, giving them the appearance of being furnished with plumes. This variety ought to occupy a conspicuous position, not only in private collections but also in those of public gardens. It will be found to form a good substitute for Latanias, Phœnixes, and similar Palms, of which amateurs are rapidly beginning to get tired. In the south of Europe it is perfectly hardy, but in more northerly climates it will succeed best under the protection of an ordinary conservatory or greenhouse. A. Ducos.

HOME-GROWN LILY OF THE VALLEY FOR FORCING.

We are at present very much dependent upon Continental growers for our supplies of Lily of the Valley for forcing. The trade in these roots has increased very much during the last few years, owing, no doubt, to the popularity of the plant, for it is second to none for general decorative purposes. Imported clumps of it are usually excellent, and produce frequently a well-furnished spike of flowers to every bud. I do not know exactly how the Continental growers produce their roots; but it has occurred to me that we ought to be able to produce equally good ones at home, seeing that we have to deal with a plant which is a native of this country, and one which grows and flowers freely almost anywhere out-of-doors. I am aware that home-grown roots have long been forced in gardens, the roots being generally selected from an outdoor bed, and packed together thicky in a pot, and forced immediately; but the flowers produced by such plants cannot be compared, either in quantity or quality, with those produced by imported roots, which appear to be grown under generous treatment, for when they come over here they have buds, as regards size, almost like Asparagus tops, and compact and firm bulbs. They are also of a suitable size for going into 6-in. or 7-in pots, which they quite fill with beautiful foliage and pretty flowers. I have bought a quantity of imported roots annually for some years, and have always forced the same plants two years in succession and planted them out the third year about the borders, and, having in this way got a little stock, I mean in future to try if I cannot produce plants for forcing equal to those that are imported. Roots planted out produce abundance of flowers in our somewhat heavy soil, and under higher culture in pots they will no doubt do even better, and probably they will force a little earlier and more freely than roots that have been shaken out, as foreign ones are, to reduce the cost of carriage. Our plan is to lift the straggling runners which have pushed from the original stool just when peeping through the soil, or even when they have pushed some inches out before the leaves unfold. These have all good roots at the base, and they are packed as thickly as possible in 6-in. pots among good rich soil, potting moderately firm, and taking care to drain well. Afterwards they are set out on the ground as closely together as they will stand, to keep each other cool and moist, the outsides of the pots being surrounded with rotten litter, and the plants watered and cared for just like Strawberry plants for forcing. It is not yet too late to lift and pot, and at the same time put out two-year-old pot plants to keep up stock; but it is as a forced plant that the Lily of the Valley is most appreciated. Its flowers are then well developed, the spikes long, and the foliage fresher and greener-looking than ever it is in the open border, where the flower-spikes are dumpy, and the flowers smaller. Though my own plants are growing in pots for convenience, the roots could, in all probability, be grown equally well in beds for the same purpose, lifting them about October or November, and putting them into pots as some people do their Violets and Strawberries for forcing. Although it is said to be a shade-loving plant, I find it to thrive amazingly on a sunny south border, among other herbaceous plants. In bed culture, therefore, I would recommend a similar situation as being the best for securing well-matured buds. Take the roots up, the same as for potting, and plant them in bundles about 9 in. or 12 in. asunder, packing the soil firmly between the plants, and seeing that it is previously well enriched with rotten hot-bed or other manure. The point is to have the greatest number of flowering buds in little bulk, for the plant looks best in moderate-sized pots. The bundles for planting should therefore consist of single roots gathered up like a bundle of Asparagus in the hand, and thus planted, and during the summer the runners should be cut off with the spade, so as to keep each stool intact, and in autumn they will lift in proper form. The Lily of the Valley delights in copious waterings during the summer, and in the case of pot plants this must not be forgotten. Occasional waterings with weak liquid manure will also be found to improve the foliage and enlarge the future flowering buds. The difficulty of getting this Lily into flower early by forcing is well known, as it will not stand much pushing, and the Mushroom-house system of forcing is but a poor makeshift. I find the best way is to introduce the plants to the Cineraria-house as soon as potted in autumn—or a common greenhouse would do. Here they begin to move away very gradually, and by Christmas, or shortly afterwards, they begin to show their flowers in advance of the leaves, as they should do, and they then stand pushing in a warmer temperature without danger; but to attempt this sooner is perfectly useless. Chef.

GROUND ORCHIDS—GREENHOUSE AND HARDY.

There are many representatives of this class in cultivation, but although some of the varieties are grown to perfection by a few, the majority of cultivators do not succeed with them, chiefly from inattention to the habits of the plants, and consequently they are not often met with; but when their culture is better known, we may expect to see them occupy that place in our gardens to which their beauty so thoroughly entitles them; the varieties at present imported from the Cape, &c., will soon be, let us hope, better understood and successfully managed, and thus new interest in this highly attractive class of plants will be awakened. The dread enemies to the greenhouse Orchids are heat and drought, and the same prejudices with which one had to contend in the case of the New Granada Odontoglossums, have now to be overcome with respect to the Disas, Satyriums, &c.; but, with the example before us of those cultivators who have brought them to such perfection with cold treatment, let endeavours be made to be more successful in their future treatment.

Disa grandiflora is certainly the most beautiful and showy of the greenhouse terrestrial Orchids, and well deserves its common name of the Pride of Table Mountain. It is found on that mountain in South Africa, on the margins of streams and pools, and during the growing season it flourishes in very wet, spongy soil, or partially submerged: as the dry season progresses the water gradually recedes, until, at the flowering time, the soil is not so wet; and shortly after they have ceased blooming the water disappears and the plants are left comparatively dry until the wet season again comes round. The dry season is the period of rest, but even during that time the plants are not without moisture at the roots, the soil in which they grow being sufficiently damp to preserve them in vigour until the growing and wet season arrives. This, then, is the principal treatment that must be imitated as nearly as possible to ensure successful results in the rearing of these beautiful Orchids, and for the rest we must be guided by experience. The native soil, even, from which the roots are dug cannot be thoroughly relied upon as a guide, for they have been found growing in sandy loam, in sand, but more frequently in sandy peat. The time of flowering in its native habitat also differs from that in which it flowers under cultivation in this country, for, according to those botanists who have seen it there, it blooms in February, but with us it generally flowers in June, July, or August; therefore the mode of treatment should be that prompted by our knowledge of the plant in its native wilds, but so arranged as to co-operate with our seasons. The following has been found a successful plan for cultivating the Disa grandiflora:—At the present time the plants should be in full growth, and placed in the coolest and shadiest part of the greenhouse as close to the glass as possible, being freely supplied with rain-water; the underneath part of the leaves should be frequently syringed in order to keep off the red spider and thrips, and the plants should be surrounded with moisture in every possible way until they show flower, which will probably be at the times previously stated; after the buds are prominent the syringing should be discontinued or confined to the lower leaves, but the plants should still be freely supplied with water until they have discontinued blooming, after which they should be removed to a cold shady pit for a time, and then be placed in the open air in the shade, having their pots plunged in Sphagnum Moss. This being their resting season they should be more sparingly watered, but should not be allowed to get perfectly dry, and the Moss around them should be well watered. On the approach of bad weather, the plants should be replaced in the cold pit; they begin to grow again in October or November, when they should be removed to a cool place close to the glass in the greenhouse, and kept moist, but not too wet, until February, at which time they should be turned out of the pots, removing what is possible of the old soil without injuring the very brittle rhizomes; the plants should then be placed in pans, crocked nearly one-third of the way up, keeping the crowns a little above the rims of the pans, filling in carefully with the compost in use, and top-dressing with living Sphagnum Moss. Continually moisten them with a fine-rosed pot or syringe, until they show signs of a vigorous growth, during which time too much water cannot well be given them, discontinuing the supply when the colours of their flowers are again visible. The Disas thrive best in pans in a mixture of two-thirds peat broken into small lumps (not necessarily free from sand), and one-third Sphagnum Moss and soft sandstone broken into pieces about the size of Filberts. If there be no sand in the peat, a little should be added. The plants should be placed in Denning's Pot-saucers (figured at p. 403), which I consider a great acquisition for this purpose, also for Masdevallias, Filmy Ferns, &c.; they will then have the air uniformly moist around them, which they cannot well receive in any other way, and will be, to a great extent, protected from the attacks of insects. Some of the best specimens of Disas ever seen have been grown in cold pits, but, knowing that plants so grown are often neglected, I recommend the greenhouse during the growing season of these Orchids, as they are more likely to be looked after there; nevertheless, anyone desirous of cultivating these plants and not having a greenhouse, must understand that they can be grown quite as successfully in a pit if carefully tended. The varieties of Disa grandiflora vary slightly in colour, but are generally of a crimson-tinted scarlet, the dorsal sepal, which is shaped like a labellum, being lighter; they are borne from two to six on a spike of from 1 ft. to 1½ ft. in height, each flower measuring about 3 in. in diameter. D. spathulata is a smaller-growing variety with pale blue flowers, with a curious, long, trowel-shaped lip. D. cornuta is a beautiful variety, partaking more of the habit of the Satyrium, to which genus it is sometimes referred; it bears from twelve to eighteen flowers on a spike, and the beautifully-contrasted blue, white, pale green, and purple of the flowers form a splendid contrast with the bright green of the leaves and the paler green barred with brown of the stems. D. lacera and D. macrantha are pretty white-flowering varieties, the last-named, in addition to having flowers of a good size, is very sweet-scented. D. ferruginea is a curious variety, with brownish or bronzy flowers, and well worthy of cultivation. D. longicornis is a very beautiful and curious variety, with blue flowers; it is easier to cultivate than most of the other varieties. D. Herschelli is a very fine variety, with large blue flowers; it is the best of its class and easy to grow.

The Satyriums are not so difficult to manage as the Disas, but there are only a few of them in cultivation; they are chiefly natives of South Africa and Abyssinia. Lovers of these plants will, no doubt, be glad to be informed that an importation of them and several fine varieties of Disa has been recently received by Messrs. E. G. Henderson & Son, of St. John's Wood. The Satyriums have tuberous roots, and most of them have large, fleshy, bright green leaves, which spread themselves over the tops of the pots; the flowers, which last a long time in perfection, are borne on spikes about 9 in. to 12 in. in length, rising from the centre of the leaves. S. aureum is orange; S. carneum, light pink; S. erectum, yellow; S. cinnamomeum, yellow and brown; S. candidum, white; S. cucullatum, green and brown; S. albidum, whitish. They thrive best in a mixture of one-half peat, and the other half turfy loam and sand, and may be grown in a cold pit all the year round; but it is better to place them in the greenhouse near the glass during the growing and flowering season; after that they should be removed to the cold pit, where they will soon lose their leaves, after which they should be kept perfectly dry until they begin to grow again, when they should be potted and watered freely.

The varieties of Habenaria and Bonatea will also be found well worth growing in pots, the latter having generally greenish-white flowers with a divided labellum and narrow sepals and petals, which give the flowers the appearance of being cut into shreds. Bonatea speciosa is one of the best; they require to be grown like the Satyriums.

Orchis foliosa, a lovely variety from Madeira, has bright green leaves, and its purple flowers, like our Orchis maculata, are borne on spikes about 18 in. in height; it blooms in June, and, when grown in large pots, forms a splendid exhibition plant. It should be placed in the greenhouse during the growing season, receiving a liberal supply of water, and, after flowering, should be removed to the cold pit or to some shady place out-of-doors to rest; give water from time to time, for this, in common with other Orchises, has tuberous roots, which are renewed annually, and, if the plants be allowed to get too dry, the new roots will not be strong enough to make flowering growth for the next year; it thrives best in strong soil, the best compost being two-thirds turfy loam and one-third peat and silver sand.

Orchis maculata, and most of the other European varieties, are pretty objects when cultivated in pots, and should be placed in a cold shady pit, only removing them to the greenhouse when their flowers begin to show colour; after they have ceased flowering remove them to some suitable shady place in the open garden, where their pots should be plunged in Sphagnum Moss to prevent the effects of the variations of temperature on their roots.

The North American, Canadian, and European Cypripediums, when properly cultivated, rival in beauty the warm house kinds, to which those who have seen them at our floral exhibitions can testify. They are found growing in marshy places, and are of easy culture provided they be kept as cool as possible and supplied with plenty of water from the time they start into growth until they have finished blooming, which varies from May to July, according to the treatment to which they have been subjected; after flowering do not let them be so freely watered. The chief cause of failure with these plants is too much heat, which induces them to push forward at improper times, making weak growth, which prematurely dies down, and the plants are either lost or only grow again so weakly as to render them of little use. The whole of the greenhouse terrestrial, and hardy Orchids in pots should be so cultivated that the growing, flowering, and resting take place at a given time each year, according to the nature of each variety, so that the whole shall be completed in a year—not growing the plants too rapidly, which will necessitate a long and dangerous rest. The Cypripediums succeed well in one-third peat, one-third turfy loam, and the rest leaf-mould and sand. C. spectabile is one of the finest; it is a native of North America, and grows about 12 in. or 18 in. in height, bearing large, dark rose and white flowers. C. spectabile album is a white variety of the preceding. C. acaule is a pretty dwarf variety, with large rose and purple flowers; this, also, is North American. C. Calceolus is a pretty variety, often found growing wild in this country; it has bright yellow and brown flowers. C. pubescens is a North American kind, resembling C. Calceolus, but stronger-growing; C. parviflorum is another of the same class. C. macranthum is a fine variety, with large purple flowers; it grows about 10 in. in height, and is a native of Siberia. C. guttatum is a Canadian variety, of dwarf habit. C. japonicum is a curious specimen from Japan, with greenish flowers of a good size, which are borne on a spike coming from between a pair of broad wing-like leaves.

Goodyera pubescens is a dwarf-growing North American Orchid, with leaves beautifully traced with silver on dark green; it rivals in beauty the hothouse kinds of Anæctochilus, which it resembles; it is easy of culture. All the Cypripediums enumerated, the Goodyera, and most of the European Orchids and Ophrys, together with the Platantheras, &c., from the northern half of North America, may be cultivated in the open garden, in company with our own British Orchises, if proper care be taken to supply them with the soils as recommended above, keeping them copiously watered during their season of growth, and free from insects at all times. The proper place for all these plants when grown in the open air is the rockery or ferny dell, where they would be shaded by trees. Places for the plants should be selected chiefly on the shady side of the rockery, provided it be not too much shaded by trees, and suitable soil put into the nooks intended to receive them; they should be planted in clumps, and if carefully tended, will thrive well.

When these plants are cultivated in this way they acquire a freshness and vigour wholly unattainable in the open borders in which they are at present mostly attempted to be cultivated, a state of existence quite contrary to the nature of the plants. Nothing is more painful than to see these plants in rows, the different species being placed side by side merely to make up a border of hardy Orchids; under such circumstances if by chance a few struggle into flower, the effect of their beauty is wholly marred by the miserable appearance of their less vigorous allies. The cultivator should bear in mind that it is not cold which kills these plants, but drought—the cutting, dry, east winds, and the burning sun. Wherever Orchids are planted in exposed situations, they should be covered with a few dry leaves during the winter as a protection. James O'Brien.

Finely-flowered Dendrobium Falconeri.—I send you a flower or two of this Dendrobe, which I imagine must be a good variety, but I have only seen one other plant in bloom, the flowers of which were vastly inferior in size and brilliancy of colour to mine. My plant, a comparatively small one, has borne about ninety flowers this year. I must say that I think with its graceful, pendent, knotted, pseudo-bulbs, and its lovely flowers, Falconeri is a difficult Orchid to beat, and I am quite sure that among Dendrobiums it is *facile princeps*. I may add that my gardener, Mr. Hill, got a certificate from the Botanic Society, Regent's Park, two years ago for this same plant, but then it had only fifty flowers on it; this year it has nearly double the number.—W. Marriott, *Down House, Blandford.*

Culture of Primula sinensis for Seed.—Sow early in March, pot off into thumb pots when the young plants are fit to handle, and shift them again into 5-in. pots, using a light compost of peat, loam, sand, and a little rotten manure. Grow them in a cool frame during the summer, and shade from bright sunshine. House them in September, keep them near the light, and never subject them to damp in winter, or to a temperature under 45° or above 50°. Keep them uniformly moist at the root, but not wet; and at all times see that the drainage is in good order, otherwise they will go off at the neck. Do not let them flower till April; and at this time, if they can have a position on an airy shelf close to the glass, it will be a great advantage. Under favourable circumstances the flowers will set without assistance, but it is better to fertilise artificially. With this object in view insert a small camel's-hair brush into the tube of the flower until it reaches the pollen, and in drawing it out just touch the stigma with it, and go over all the flowers which are ready in the same way. I ought to have stated that the plants which have the largest, most perfect, and finest-looking flowers generally, should be selected for seed-bearers. When the seeds are ripe, gather and dry them in the usual way.—Chef.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Gesnera elongata.—This old-fashioned Gesnera is still one of the most useful of the whole genus, continuing as it does to flower nearly all the year round. It grows to a considerable height, and its long tubular flowers, which hang in deep reddish carmine bunches like the leaves, are covered with down. It is a plant which requires but little care; in short, so long as it has plenty of warmth and water, it will continue to flower well all through the winter months.—Q.

A New Stock for Epiphyllums.—A writer in the "Deutsche Garten-Zeitung," for March, recommends Pereskia calandriniæfolia as the best stock for Epiphyllums, and adds that the German florists in the neighbourhood of Düsseldorf have used it exclusively for several years. It is as easily propagated as P. aculeata, and makes a stronger growth; it is thus better able to support the heavy succulent growth of the Epiphyllums grafted upon it than P. aculeata. In short, this stock answers every purpose for which the Cereus speciosissimus is used, and being more woody, it is not so liable to rot off if neglected.—B.

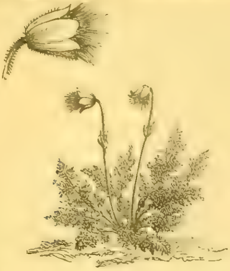
THE FLOWER GARDEN.

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

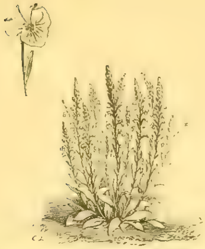
Still the cold winds retard the coming of the flowers and spoil the beauty of those that have come. The long-neglected Atragene austriaca is one of the most beautiful plants of the week, resembling a Clematis, but with a distinct charm of its own. The white form is more attractive than what we should call the nominal or purplish one, and much more showy at a distance. It is a low climber, and is seen to greatest advantage trailing through low bushes, and also creeping over banks or rough rock-work. Both the purple and the white forms may be seen in good condition in Parker's nursery at Tooting. The effect of the Californian Delphinium nudicaule is very good now; it seems to be more at home in our climate than many plants from the genial coast on which it grows. It is particularly fine in Rumsey's nursery at Waltham Cross, where it is raised in quantity from seed. The florist's Tulips (varieties of T. Gesneriana) are opening, and as yet there is a good show of the early or what are called the bedding varieties. There is a superb display of these in the graveyard of the St. John's Wood Chapel, Wellington Road. The Poet's Narcissus—the form of it usually cultivated for the London market—is the finest hardy flower of the week, and more honoured than most hardy flowers by being grown in quantities, like a vegetable, in the London market gardens, as well as in the flower borders of all lovers of good hardy bulbs. A precious property belonging to the varieties of the Poet's Narcissus is their blooming in succession; the bloom of various forms is past before that of others opens. The showy flowers of the hybrid Pyrethrums and the Peonies are opening, while Iris florentina joins the many superb varieties of I. germanica now in blossom. The most beautiful native plant of the week is the Water Violet (Hottonia palustris), a water plant too seldom grown in gardens; with it is the Bog Bean, delicately fringed and chaste in hue. The Lily of the Valley, now forced so extensively that we cease to long for its appearance out-of-doors, opens leisurely its bells, and blossoms along with its companion in the Alpine copses—Anemone alpina. The Camassia esculenta, a blue-flowered bulbous plant, is also in bloom. Leichtlin's Chlorogalum, a handsome, hardy, bulbous plant, with cream-coloured flowers, is in bloom at Kew, and the dwarf Pentstemon nitidus is also opening its earliest flowers. Some beautiful hardy Pea-flowers succeed those gone before, notably Astragalus monspessulanus and Coronilla vagans. The Geraniums and Poppies (P. lateritium) begin to show colour, and the American Cowslips (Dodecatheon) are among the most beautiful ornaments of the rock-garden or borders, though the east winds do much to prevent their perfect blossoming.

THE HERBACEOUS CORAL PLANT.

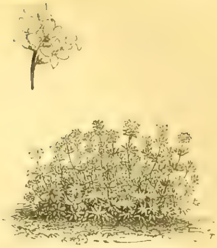
The Brazilian Coral Plant is not rare in conservatories, and is often planted out in gardens, where its large clusters of crimson flowers make a brilliant show. This is Erythrina Crista-galli, and is generally sold by florists under that name or as the Coral Plant. It is easily managed by keeping its thick clumsy stem in a dry cellar in winter, and setting it out in the spring, as one would a Dahlia root. There are several other Erythrinas (the name being from the Greek word for red), one of which is found in this country from North Carolina southward. Probably every one recollects his first meeting with a striking plant, and though we have seen this many times since, its acquaintance was first made under peculiar surroundings. Twenty-five years ago this month the writer (in "American Agriculturist") was going down through the State of Sonora, Mexico, in charge of a government train. We travelled along very smoothly until we came to what is known as Guadaloupe Pass, where one could look down on a sea of mountain tops, and down which our waggons had to go. The descent was about 1000 ft., and for a good part of it the mules were taken out and the waggons let down by hand. Perhaps waggons have been taken down more difficult defiles, for it can hardly be called a road, but we have never seen it done. While all this hard work was going on, our eye caught sight of a large patch of the most brilliant scarlet at one side of our path and part way down the ravine, and there was



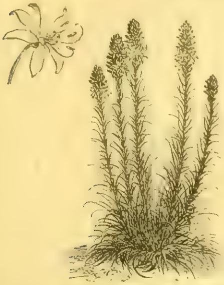
Alpine Wind-flower (Anemone alpina).



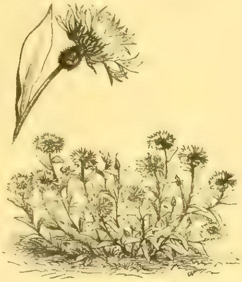
Gentian-like Speedwell (Veronica gentianoides).



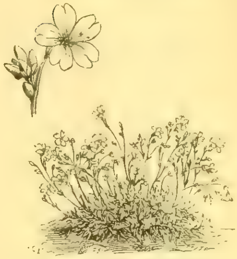
Woodruff (Asperula odorata).



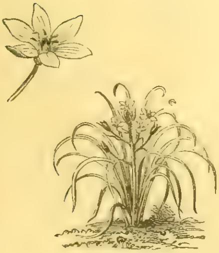
Yellow Asphodel (Asphodelus luteus).



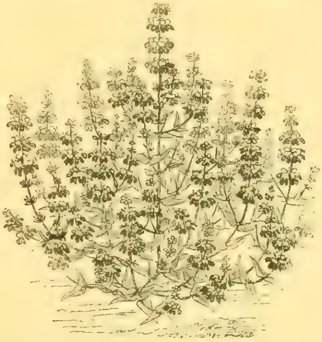
Mountain Cornflower (Centaurea montana).



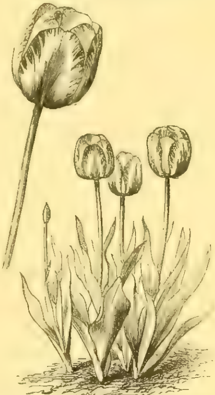
Large-flowered Chickweed
(Cerastium grandiflorum).



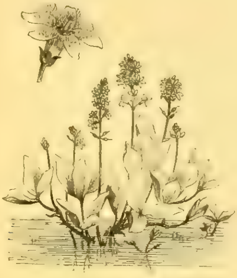
Star of Bethlehem
(Ornithogalum umbellatum).



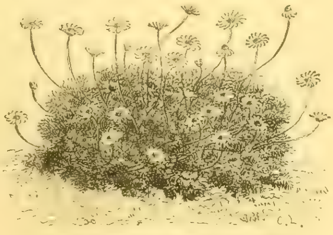
Two-coloured Collinsia (Collinsia bicolor).



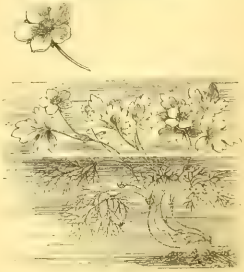
Gesner's Tulip (Tulipa Gesneriana).



Bog Bean (Menyanthes trifoliata).



Turfing Daisy (Pyrethrum Tchihatchewi).



Water Crowfoot (Ranunculus aquaticus).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

never anything more tantalising; here below were plants we did not know, and above were mules and their Mexican drivers, and waggons, that we knew only too well. At length the last waggon had been lowered, and the tempting plants could be visited without neglect of duty. Here was a sight than which we have rarely seen one more brilliant. A patch several feet across of what we knew to be a Coral Plant, but could hardly think it the same as that of the Atlantic and Gulf States, so far inland. Still it proved to be the same as that, which is Erythrina herbacea. It has a large thick root or underground stem, and two sorts of stems, 2 ft. to 4 ft. high, one bearing leaves only and the other only flowers, or with a very few leaves. The leaves are compound, having three divisions or leaflets, which are somewhat triangular egg-shaped, and sometimes lobed at the base; the stems and leaf-stalks are prickly. The flowering stems bear a raceme 1 ft. or 2 ft. long of narrow flowers which are about 2 in. long. The structure of the flower shows that the plant belongs to the Pea family, but here the conspicuous petal or standard, which in the Pea stands erect, is horizontal and folds over the other parts of the flower, and is of a deep and showy scarlet. The several-seeded pod is much constricted between the seeds, which are about the size of the common Bean, and of a bright scarlet. These brilliant seeds are often picked up by travellers in Florida and other Southern States, and they are frequently sent to us for a name. This Coral plant will probably prove hardy far north of its native localities, as the stems die down in the autumn, and the root is protected underground. Plants in our garden near New York survived the severe winter of 1874–75, and we trust that they may come out all right this spring. Should it prove, as now appears likely, hardy, it will be a valued addition to our borders.

SUB-TROPICAL PLANTS AND GEOMETRICAL GARDENS.

SINCE sub-tropical plants have become so plentiful in gardens as almost to equal in numbers those that are grown for the beauty of their flowers, it becomes a question whether the form of our flower-beds should determine what should occupy them, or whether the beds should be altered to suit their occupants, seeing that upon the free, unfettered growth of sub-tropical plants much of their beauty depends. A geometrical garden, all points and angles, may look very well on paper, and even laid down in Box, but to fill it satisfactorily the plants must conform to pinching, pegging, and training, like a Verbena. Therefore the only fine-foliaged plants available are those used for carpet bedding; but that these look best in elaborately-designed beds I very much question, for it must be apparent to even those of limited experience in planting, that it is far easier to make an effective arrangement of the materials at disposal, in beds of simple design, such as circles, ovals, or squares, than it is to plant an intricate design so as to make it look well; for in the latter case the space is generally so contracted that little choice is left to the plants, whereas beds of simple design allow free scope for properly arranging and contrasting both flowering and fine-foliaged plants. Beds on Grass and of considerable size suit fine-foliaged plants best, as they are most effective in large masses, and the space between the beds should be correspondingly ample. It is a loss to purely geometrical gardens, which almost invariably occupy the most conspicuous positions of the highly-dressed grounds and the best views from the windows, that the forms of the beds of which they consist should so entirely exclude the majority of the finest varieties of sub-tropical plants, which are on that account forced to be accommodated in sequestered nooks and glades, where they attain full and free development. Before, therefore, deciding on any particular plan for a flower garden, it would be well to take care that, in addition to its looking satisfactorily on paper or on gravel with Box-edgings, it also answered the purpose for which it was intended—viz., to exhibit in the most effective manner consistent with our climate the most beautiful forms of vegetation from more favoured lands. When beds are divided by walks not wide enough to walk in, and the beds themselves, owing to their numerous points and angles, are only capable of being effectively filled with miniature plants, it becomes obvious that the pleasure of seeing the most favoured positions filled with the best plants is lost.—J. GROOM, *Henham.*

The Weirleigh Surprise Forget-me-not.—In a recent number of THE GARDEN mention is made (see p. 348) of a variety of the Myosotis sylvatica, under the name of Weirleigh Surprise, having been lately exhibited as a novelty. It is one in reality, but it has been growing in the Queen's County, in Ireland, for some years. I exhibited two large pots of it at the Horticultural Show in Dublin on the 27th of April, grown from slips obtained last autumn, but no notice was taken of them in the reports. Its ground colour is white, with a distinct blue stripe in each division of the corolla, forming a very pretty star-like marking. It is rather remarkable that this variety should have sprung up in two localities so remote. The specimens exhibited here have more the character of M. dissitiflora than M. sylvatica.—J. WALSH, *Hollybrook, Foxrock, near Dublin.*

A FEW SPECIES OF TULIPS.

BY far the best Tulip which I have seen for many a day is Tulipa Greigi. Mr. Fitch's beautiful figure of it in the Bot. Mag. for 1876 is no exaggeration; it simply does justice to this splendid species. For some weeks past its handsome brown-spotted leaves have been a conspicuous ornament to the garden, and they are now surmounted and set off by gorgeously bright orange-red flowers. Its short stalk and tidy growth, too, render it all the more desirable. It appears to be a very hardy and healthy species, and comes up freely from seed. I am also much pleased with the bright little Tulipa Julia, which M. Max Leichtlin tells me is a small form of the handsome T. Eichleri, of which Mr. Fitch also gave us a figure last year—it might well be called T. Eichleri minor; it is very dwarf in growth, and has bright scarlet-pointed petals, with a black and yellow centre. Tulipa Hageri, with the outside of the petals of various shades—of red sometimes tinged with green, and the inside red with a black centre—is also interesting. T. maculata, closely allied to T. Julia, but double the height, and in colour much resembling T. oculis solis, makes a very gay clump. T. acuminata cornuta, with its strange narrow parti-coloured petals, is so quaint and curious that no one who has once grown it likes to be without it. I am very fond of the rather too tall but graceful yellow and green Tulip, which comes to me under three appellations—T. altaica, T. præcox, and T. viridiflora; it harmonises well with its lovely congeners T. elegans and T. retroflexa, whose beautiful magenta and canary-yellow reflexed petals are a sight to gladden one's heart on a bright sunny morning. Can any of your readers tell me the origin of a very remarkable Tulip which is known in the trade under the name of T. vitellina? It has pointed, reddish-orange petals, with a conspicuous white median rib on the outside, and a black central eye. Mr. Baker, to whom I sent a flower, thinks it is either a garden race of T. oculis solis, or a hybrid between T. acuminata and T. Gesneriana. Many species of Tulip have this year no blooms. In consequence of the wet summer of 1875 the bulbs did not ripen properly. H. HARPUR CREWE.

Drayton Beauchamp Rectory, Tring.

Climbers on Dead Trees.—A few years ago one of our old Spruces (Abies excelsa) died. It occupied a conspicuous place in the front grounds. We cut off all the twigs and the ends of the main branches so as to form a cone, with the apex 15 ft. high, and the base about 8 ft. diameter. The extremities of the branches were connected from the bottom to the top with strong twine, forming an irregular network. Underneath the circumference of the base a trench was dug and filled in with good soil, then Climbers (Cobæas, Lophospermums, Maurandyas, and Madeira Vines) were planted. They soon reached the top, and so covered the netting that the eye could not penetrate beneath its entangled surface; and the effect of this cone of leaves and trumpet flowers was one that caused many a passer-by to stop and admire what, at a first glance, seemed to be a tree bearing dissimilar flowers and foliage.—"Moore's Rural." [A no less desirable and more permanent effect may be easily obtained by planting choice free hardy Climbers, such as Clematis grandiflora, in like manner. In countries where there is an open winter, Clematis balearica is particularly suited for this purpose, as it flowers beautifully in winter and spring. It need hardly be said that the new Clematises may be grown in this way, but these are assured of careful culture and pleasant homes in our gardens. It is the many seldom seen and neglected small-flowered Clematises and other fine Climbers that are either never grown at all, or, if grown, mutilated against a wall, that ought to be grown in this happy manner. Whole gardens of beauty might be formed in many a place where there is not now a single Climber, by clothing dead trees and shrubs in this manner.]

The Iberian Iris (I. iberica).—I have this now in fine bloom, and, according to my idea, it is one of the best of all hardy flowers. Though often said to be a difficult plant to grow, I find it do well in a border of ordinary sandy loam. The flowers are simply magnificent, very much in the way of those of I. susiana, but I think finer. I. susiana, though it exists and occasionally flowers in a fitful manner in the open border, requires either frame or hand-light protection to induce it to thrive, whereas I. iberica is quite independent of any sort of protection. When in full bloom it does not grow more than 1 ft. in height, and more resembles an Orchid from some sunny clime than a plant capable of withstanding the vicissitudes of our fickle climate.—Oxon.

GARDEN VEGETATION DURING APRIL.

By JAMES M'NAB, Royal Botanical Garden, Edinburgh.

In Scotland the month of April has been very variable, attended with much wind, snow, and rain, with the exception of one week at the beginning, when mild weather prevailed. On six consecutive mornings, viz., from the 4th till the 9th inclusive, the thermometer at 6 a.m. registered between 44° and 57°, the highest being on the morning of the 5th. During the month the thermometer was fourteen times at or below the freezing point, indicating collectively 69°, being considerably more than has been registered during the month of April for twenty-two years, as will be seen by the accompanying Table. This Table gives the number of degrees of frost registered during each month from October 1st, 1854, till April 30th, 1876. The lowest temperatures indicated during the month were on the mornings of the 2nd, 3rd, 11th, 13th, 17th, 23rd, and 30th, when 25°, 27°, 26°, 20°, 27°, 25°, and 25° were respectively registered, while the highest morning temperatures were on the 4th, 5th, 6th, 7th, 8th, and 9th, when 45°, 57°, 50°, 50°, 44°, and 44° were indicated. The cold, backward, and changeable weather experienced during the greater portion of April has been very much against vegetation, many of the trees being still in their winter condition. The moisture, however, to which they were subjected towards the end of the month has swelled the buds considerably, and rapid progress may be expected during May. Such an excess of rain penetrating the ground before the leaves expand, generally brings a rich and full foliage, which is rarely the case when the leaves come out during very dry weather, unless in situations where the ground is naturally damp. Hardy spring flowers are also far behind, and many of them are much injured by the frost. After the mild weather during the beginning of April, which was followed by several frosty mornings, the lowest marking was on the 13th, when the thermometer indicated 12° of frost. This sudden change of temperature has injured many Coniferous shrubs, particularly those belonging to the Cupressus group; also a few species of Juniperus and Pinus. The injury to the Cupressineæ section was probably hastened by the sudden change of colour which most of them assumed. A large proportion of the species injured are of Eastern origin, and a few are natives of the Western hemisphere. Piceas and Abies have all wintered well. The following is a list of the species which have suffered most:—

Table showing the Number of Degrees of Frost Registered during each Month, from 1st October, 1854, to 30th April, 1876.

	October.		November.		December.		January.		February.		March.		April.		
	Number of mornings the Thermometer was at and below the freezing point.	Degrees of Frost registered during each month of October, from 1854 to 1876.	Number of mornings the Thermometer was at and below the freezing point.	Degrees of Frost registered during each month of November, from 1854 to 1876.	Number of mornings the Thermometer was at and below the freezing point.	Degrees of Frost registered during each month of December, from 1854 to 1876.	Number of mornings the Thermometer was at and below the freezing point.	Degrees of Frost registered during each month of January, from 1854 to 1876.	Number of mornings the Thermometer was at and below the freezing point.	Degrees of Frost registered during each month of February, from 1854 to 1876.	Number of mornings the Thermometer was at and below the freezing point.	Degrees of Frost registered during each month of March, from 1854 to 1876.	Number of mornings the Thermometer was at and below the freezing point.	Degrees of Frost registered during each month of April, from 1854 to 1876.	Total degrees of Frost registered during each year, from 1st October, 1854, till 30th April, 1876.
1854-55	5	20	7	21	8	21	16	100	22	220	22	90	11	49	521
1855-56	7	32	14	58	20	113	19	95	6	22	12	62	4	6	388
1856-57	2	3	11	63	13	101	17	72	12	20	8	36	8	22	317
1857-58	2	3	6	25	1	4	15	37	16	95	15	70	12	45	279
1858-59	4	11	16	72	8	29	9	23	4	15	5	28	13	25	213
1859-60	10	56	14	55	22	106	17	52	21	125	18	45	12	45	484
1860-61	2	5	8	30	18	337	15	167	10	36	11	22	5	6	603
1861-62	4	7	14	55	15	105	12	20	7	32	12	46	7	16	281
1862-63	3	3	22	110	2	2	15	32	11	44	5	25	7	12	238
1863-64	5	10	10	35	14	50	21	394	22	165	23	71	7	12	737
1864-65	8	36	17	62	17	75	22	104	18	98	21	52	2	2	429
1865-66	6	21	13	43	5	16	10	40	18	38	15	66	3	7	231
1866-67	7	20	13	33	9	31	22	210	5	12	20	77	1	2	385
1867-68	5	8	15	40	13	41	17	75	8	10	13	29	3	10	213
1868-69	4	10	13	42	8	22	9	37	4	6	18	57	3	8	182
1869-70	5	12	15	58	19	119	16	79	17	74	5	50	9	19	408
1870-71	2	5	20	53	17	120	28	168	9	16	11	28	9	18	408
1871-72	4	24	13	39	15	59	13	42	4	13	8	23	4	5	205
1872-73	5	12	12	17	10	54	12	63	21	123	12	25	8	8	302
1873-74	9	31	10	35	9	36	9	32	11	69	6	37	6	6	246
1874-75	3	10	10	20	27	277	14	87	21	75	8	45	7	18	532
1875-76	5	13	15	80	12	81	12	103	19	113	21	98	13	69	557
		352		1046		1799		2111		1456		1122		420	

List of Conifers which have suffered.

Thuja orientalis compacta
,, ,, pygmæa
,, ,, glauca
,, ,, globosa viridis
,, ,, pyramidalis
,, gracilis conica
,, Fortunei
,, incarnata
Thuja aurea
,, elegantissima
Cupressus sempervirens
,, torrulosa
Retinospora ericoides
,, leptoclada
Taxodium sempervirens
Juniperus tripartita
,, drupacea
Juniperus chinensis
,, cracovea
Pinus insignis
,, muricata
,, Brutia
,, densiflora
,, patula
,, caroliniana
,, Don Pedro

On the 30th of April 122 species of Alpine and dwarf herbaceous plants were counted in flower on the rock-garden, the most conspicuous being—

Andromeda fastigiata
,, tetragona
Anemone apennina
,, bracteata
,, Robinsoniana
,, ,, alba
Berberis Darwinii
Bryanthus erectus
Coptis trifoliata
Draba aizoides
Epigæa repens
Erica australis nana
,, hybernica alba
Erica hybernica stricta
*Erythronium americanum
,, giganteum
,, ,, roseum
Gentiana verna
Hutchinsia alpina
Iberis gibraltarica
Menziesia cœrulea
,, empetriformis
Polygala Chamæbuxus
Primula ciliata purpurata
Primula cortusoides
,, purpurea
,, scotica
Pulsatilla bracteata
,, vernalis
Ranunculus amplexicaulis
Rhododendron Chamæcistus
Rhodora canadensis
Sanguinaria canadensis
Saxifraga (many species)
Trillium grandiflorum

The following spring plants complete the list of species annually recorded to show their periods of flowering:—

	1876.	1875.
Hyoscyamus physaloides	April 2 ...	March 31
Narcissus pseudo-Narcissus	,, 3 ...	April 1
Adonis vernalis	,, 5 ...	March 29
Fritillaria imperialis	,, 6 ...	April 18

Select Varieties of Double Daisies.—Having last year purchased most of the sorts of Daisies enumerated by "A. D." (see p. 428) I am enabled to endorse nearly all the remarks made by him in respect to them; but, in addition, I purchased a 2s. 6d. packet of seed early in the autumn and sowed it at once, and nearly every seed must have grown, for I have been able to plant out probably not less than 1000 plants as edgings to paths, with a result this spring far exceeding my anticipation. Some of my seedlings are exceedingly good, and the variety among them very great. I observe that "A. D.," in speaking of Pink Beauty, describes it as being a close-quilled variety but showing the eye too much. I am not acquainted with that particular kind, but among my seedlings I can find a pink-quilled variety, without an eye and very globular; at present it is, however, small, not being larger than Bacchus, but I do not expect to find seedlings at their best the first season. Last year I bought both seedlings and named plants, and when the seedlings came into bloom I was somewhat disappointed, but, as my stock was then limited, I did not destroy them; on the contrary, I completed an edging with them, begun with such sorts as Queen Victoria, Nil Desperandum, Renown, Masterpiece, &c., and, to my surprise, this year the seedlings turned out nearly as fine as the named varieties. I intend taking advantage of "A. D.'s" suggestion regarding the formation of a bed of Daisies, and hope in due course to report the result.—W. H., *Luton*.

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* This plant is flowering freely in the stove compartments, which is not the case in the open border.

Wild Austrian Pinks.—Perhaps some of your correspondents may be able to give replies to the following questions:—Are seeds or slips of the beautiful, single, rose-coloured Pink, which grows wild in profusion in the neighbourhood of Innspruck, and also in some parts of Northern Italy and Germany on rocky banks, to be had in Britain? and if so, where? Some years ago I brought home seeds of these wild Pinks collected abroad; they grew freely in a garden in South Wales, seeded, and continued in the ground for several consecutive years, but at length were lost, it is believed, in consequence of neglect. These Pinks, of a pale rose hue, would not only be a useful addition to all gardens, but would probably flourish on the tops of walls as well as Wallflowers or Snapdragons.—Ll.

Raising Polyanthuses from Seed.—I have been cultivating Polyanthuses for some years past from seed, and have now a good collection of them. This year I could have cut a bushel basketful of bloom at a time. I tried several times to raise them by sowing in boxes or pans under glass, but the young plants always came up weakly; I find it best to sow in the open ground, as seedlings raised in this way make stronger plants in less time, and incur less trouble. An open piece of ground in the kitchen garden, enriched with leaf-mould, suits them well; it is raked very fine; the seed is sown broadcast, and raked in. In hot, dry weather, the young plants require watering, or they lose their foliage, which tends to weaken them, and consequently the bloom will not be so fine as it otherwise would be. Thus situated I leave them to bloom, and as there are always some not worth growing these are pulled out at once and thrown away; others, of superior merit, are lifted for potting or for planting in other quarters; a small stick is placed to those from which I intend to save seed. I like to make two sowings—one as soon as the seed is ripe, and another early in spring. I have sometimes sown under partial shade from a tree, and thus circumstanced they do well, being protected a little from the hot sun and spring frosts. Both birds and slugs are very destructive to Polyanthus blooms.—W. Divers, *Wierton, Maidstone.*

Caltha palustris monstrosa.—In most collections of hardy plants the double variety of Caltha palustris may be seen, and a fine showy object it is at this season when covered with its brilliant yellow flowers. My object, however, in writing is to recommend a much finer variety known as C. p. monstrosa. The colour of the bloom is not of quite such a dark hue as that of the ordinary variety, but as the individual flowers and leaves are nearly double the size it is a still more desirable plant. It is generally seen in nurseries plunged under water in pots, but this is by no means necessary, as it does well in any border not too dry. Here it is in a border under a north wall, and gets no more water than other plants in the same bed.—Oxon.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

New and Rare Trilliums.—Among spring flowers you strongly commend Trillium grandiflorum. It is a lovely plant, but there are two other species which I should also recommend to all who admire and can grow the Trilliums. One is T. nivale, of the purest white and dwarf; the other is T. erectum album, with narrow pure white petals, showing the pale green sepals between and a rich purple ovary, making altogether a very beautiful combination.—H. N. Ellacombe, *Bitton Vicarage.*

The Umbrella Plant (Saxifraga peltata).—This is one of the best of Saxifrages; its stems, which are an inch in diameter, rise to a height of from 12 in. to 15 in., and bear large terminal heads or clusters of bloom, of a blush-pink in colour. The petals vary in number from five to eight, and the stamens from eight to fifteen. It is in flower now before the leaves appear, and is a fine plant for borders in front of shrubs.—R. H. B.

Christmas Roses Seeding.—Does the Christmas Rose bear seed? is a question often asked. This, I think, depends very much on the weather at the time when the plants are in bloom. I have a large clump of it on a sheltered border, with quite a load of seed-pods just ripening. I find that the old flowers remain intact until the pods are fully matured, and that they change from clear white to a dull green. The blossoms measure fully 4 in. across, but their size is greatly influenced by cultivation, as this same plant, when growing in a poor shrubbery border, produced flowers quite small in size.—J. G.

Edgings in Shady Places.—M. Van Hulle recommends the old and graceful Meum athamanticum, an umbelliferous plant occurring in most botanic gardens, as a good subject for forming edgings in shady places. He also praises common hardy Ferns for this purpose.

PLATE XXI.

THE JAPAN IRIS.

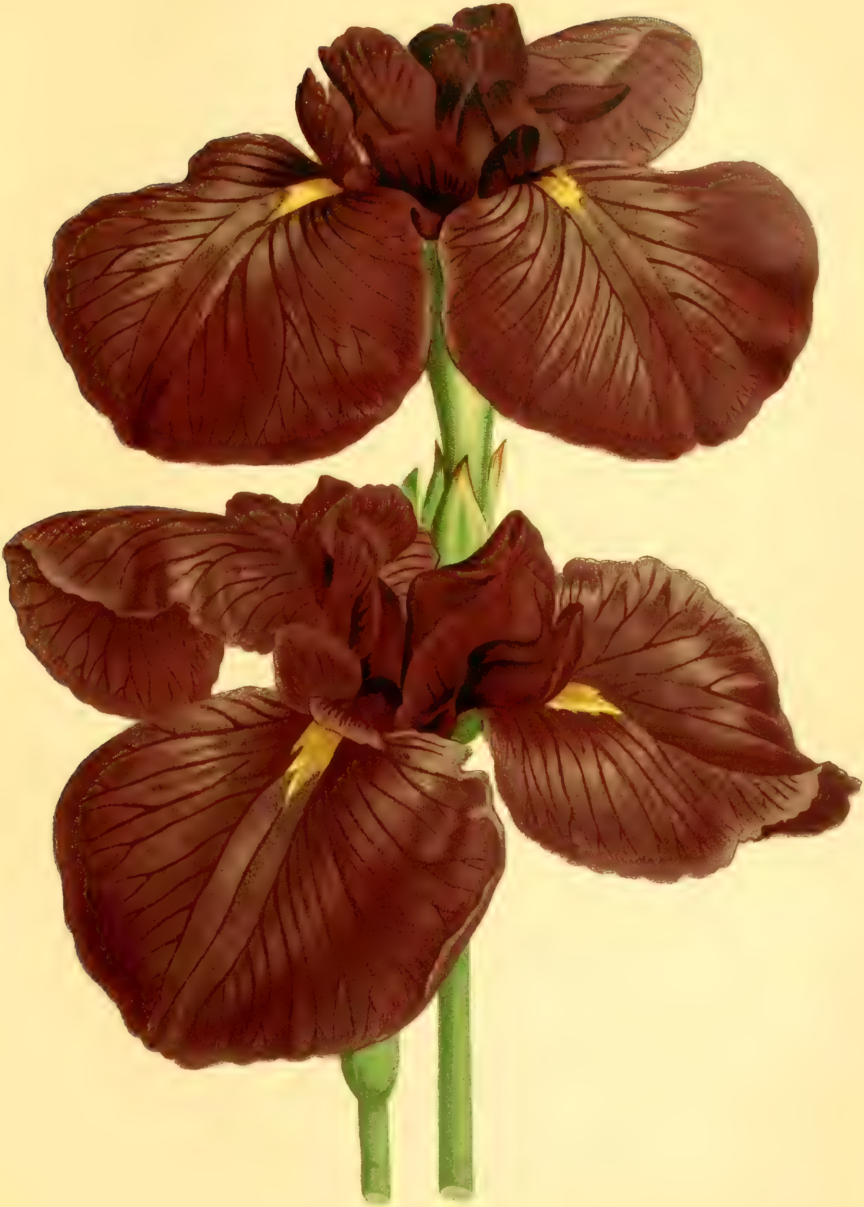
(IRIS KÆMPFERI VAR.)

This slender-growing evergreen hardy Iris, from Japan, often attains a height of 2 ft. For many of the most beautiful varieties of it now in cultivation we are indebted to Dr. von Siebold, the celebrated German botanist, at Leyden. Kæmpferi is but a garden name, its proper one being Iris setosa of Pallas, a name under which, however, it is scarcely known by cultivators. It is a plant which will grow in almost any kind of soil, but it succeeds best in a good loam, provided a quantity of peat be added to it, not so much to afford nourishment as to retain moisture during the summer months, for plants of this Iris like moisture, and their numerous roots will often go 2 ft. deep in search of it. It dislikes shade; on the contrary, it prefers a sunny, hot situation. Two-year-old seedling plants of it flower in June and July, and among them will be found endless variations of colour, from white to dark blue, and from pale rose and lilac to deep maroon and brown. Complaints are often heard that plants of these Irises are difficult to flower, and the fact is, that if not carefully transplanted, they do not flower the first year, but are on that account so much finer the second season. In short, they must be well established before they can produce fine flowers. They may be propagated by division and by means of seeds, which should be sown as soon as gathered, either in pots or in the open ground, when they will vegetate the following spring. Some beautiful varieties of an Iris bearing this name have been sent out by Messrs. E. G. Henderson & Sons, of the Wellington Nurseries, one of which has the larger outer petals doubled, that is, six instead of three. These seedlings are certainly very fine, but they do not belong to the Kæmpferi or Setosa race; they are garden forms of Iris lævigata of Fischer. All of them are well worth cultivation, and it is to be hoped that repeated trials in raising seedlings will result in getting them to bloom more freely than at present.

Max Leichtlin.

Borage and some other Common Plants in the Garden.—The increasing interest of The Garden to the majority of lovers of flowers who are not and never will be botanists or interpreters of floral Latin encourages one of the above class to make a few suggestions, as well as to a ask a few questions, hoping that if a reply be given the names of flowers may be as intelligible as in the delightful reports regularly given of hardy flowers blooming in the week. Is not Borage (as it is sometimes termed) too much neglected? It is one of the most beautiful of our blue flowers, which are so much rarer than other colours. The wild Blue Veronica or Speedwell would be a grand addition to our gardens if it would bear cultivation, and it is to be hoped that the readers of The Garden are now so enlightened as to the beauty and value of all wild flowers that no one will be alarmed at the suggestion of bringing the Dandelion into cultivation as an ornamental flower, the beauty and brilliancy of which at this present time make me daily regret that I had not transplanted some last year. A friend having sent me a turf cut out of the Swiss pasture, which appeared to contain several wild plants, I planted it on a raised bed. The first two years plants of the wild Blue Salvia flourished among the Grass, but these have now disappeared, and it seems probable that the great increase of a gigantic species of Dandelion and also of a Thistle, which is not the same as the Common Thistle, although it resembles it, has overpowered the Blue Salvia, which thrives in various parts of Germany where the climate is intensely cold in winter, and especially in the neighbourhood of Munich. The Yellow Salvia grows wild in great luxuriance, and in profusion about Lugano, where the Yellow Foxglove is also found wild. Among the innumerable garden flowers which seem to have become almost extinct from the pernicious system of depending solely upon bedding is the Scarlet Lobelia. The white hardy Jessamine and the old-fashioned Honeysuckles, viz., the fragrant White which blossoms in May, and the fragrant Red and Yellow, which used to be an indispensable accompaniment to a nosegay of Roses, are now very seldom seen; indeed, Honeysuckles and Periwinkles are deserving of much more attention; the large flowering blue kind of the latter is certainly unrivalled for its evergreen foliage, great adaptability, and numerous and beautiful flowers for so large a part of the year. Would it be too much to hope that The Garden may gratify its readers by giving a weekly or monthly list of wild flowers, which would afford additional beauty to our gardens?—Z.

[illegible] *The Garden,* [illegible] Southampton Street, Covent Garden [illegible]



THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Ferns.—Some have thought it necessary to have a house wholly devoted to Ferns, where anything approaching successful culture is required, but such is by no means the case; certainly where they are to be grown in a way that will exemplify the true character of many of the kinds, a somewhat close humid atmosphere is necessary; the fronds will also assume a deeper tint of green under such conditions, accompanied by close shading, but this system of management is not calculated to impart the more sturdy state of growth particularly needful where the fronds are wanted in a cut state. Amateurs, who have an ordinary greenhouse or Vinery need have no hesitation in attempting to grow them in such houses, particularly if a selection of the most suitable sorts be made; but when associated with other plants, instead of having them interspersed amongst those that are altogether different in their requirements from Ferns, it is better to place them together at one end of the house. If an ordinary stage occupy the centre, the Ferns will do best placed at the darkest side, which is that which is least suited to flowering subjects; if Vines or climbing blooming plants be grown up to the roof, these will afford the requisite shade; if not, a piece of thin material may be hung over them inside the glass, so as not to prevent the other occupants from getting all the light which they require. In all cases it is best to keep Ferns that are intended for cutting under-potted, after they have arrived at a size large enough to produce fronds in sufficient quantities. The air and light which flowering plants need will be found to induce a hardier condition in the case of the Ferns, and will render them better suited to the purpose required. Adiantum cuneatum, which is a general favourite, will grow to a fair size in houses such as those under consideration. The stronger-growing A. formosum will stand better in a cut state even than A. cuneatum; A. Capillus-Veneris will also succeed very well under such treatment, as will likewise Pteris serrulata, both the normal and crested forms that now exist, all of which are of a hardy character. The white and green variegated P. cretica albo-lineata is also suitable for growing in this way. Davallia canariensis and D. bullata, Doodia aspera and D. lunulata, are all appropriate, both in size and habit, for the kind of management suggested. One of the most useful Ferns in cultivation is Lomaria gibba, when it is not allowed too much root-room. If any be needed for the decoration of sitting-rooms, for which the more hardy kinds of Ferns are very suitable, they should be properly prepared for that purpose by not being previously grown too tender. Many Ferns are kept confined in cases shut up with very little air, that would do quite as well in a room without any covering if they were not subjected to the influence of gas or too much dust. Where plants are required for room windows facing the north, Ferns will be found to succeed best. Amongst the most suitable kinds for room decoration are the numerous forms of Scolopendrium and Asplenium marinum. Many other Ferns, in addition to those named above, may be grown in such places as greenhouses and Vineries, but those named are more particularly adapted for general decorative purposes, and especially for cutting. One of the principal points in their cultivation is never to allow insects to get established upon them, which they inevitably will, if means be not taken for their destruction as soon as they make their appearance. This remark especially applies to thrips, which may be expected to attack them every summer. For these, dipping in Tobacco-water is the best remedy; brown scale is even worse than thrips, for although it does not increase so fast, still, from the inability of many Ferns to bear dressing with any insecticide that will kill the scale, it entails a great deal of labour to keep it in check by means of hand-cleaning. In the selection of plants, particular care should be taken to see that they are free from it, and never to allow them to touch each other, or to remain under any infested plants, for in either case they are sure to get affected. Ferns grow most freely in peat, but good fibrous loam gives more substance to the fronds; in both cases one-sixth of charcoal broken in bits about the size of Horse Beans, and mixed with the soil, in addition to a sprinkling of sand, will be found beneficial; if charcoal cannot be had, coal cinders will answer the purpose. See that the pots are well-drained; 1½ in. in the bottom of a 6-in. pot will not be too much, and more in proportion to the size of the pots, in all cases putting half an inch of Sphagnum, or fibrous pieces of the potting soil over the drainage, as the quantity of water required by Ferns when in active growth is such as to render this necessary, in order to keep the soil from being washed down into the drainage, and thus preventing its acting properly. With Ferns, as with other plants that need protection from the direct rays of the sun, the shading used should not be left over them when not required, for although they will not have quite such a dark green appearance when subjected to a great deal of light, they will be found much better calculated to fulfil the purposes for which they are wanted. Those who have not had any experience in Fern culture need not doubt succeeding, provided the above directions be followed; in addition to which they must never be permitted to get dry at the roots, or allowed to flag from want of water.

Pelargoniums, both fancy and large-flowering kinds, will now require more water than they did in winter; if they have made satisfactory progress through the spring, the soil will be completely filled with roots, and if, in this state, they are ever allowed to become so dry as to cause the leaves to flag, all those about the base of the plant will be liable to turn yellow and drop off. With Pelargoniums such as those just mentioned, amateurs who have not had much experience in their cultivation will find it safe practice to keep the soil all through the winter in a much drier state than would do for the generality of other plants; but, if treated similarly at this season, they will not succeed. They require very different treatment from the Zonal section in the matter of water, and through a want of knowledge regarding this many do not succeed in growing the large-flowered and fancy kinds, often confining their practice to Zonal kinds alone, which do not possess nearly the beauty or variety of the former. If any traces of aphides be found on them, let them be fumigated twice in succession before they come into flower, as, if this has to be done when the plants are in bloom, it will cause all the flowers that are open to fall off. It is a good plan to fumigate Calceolarias once or twice slightly before the flowers are too far advanced, or the effects of smoking will cause them to come deformed.

Cyclamens that have done blooming should be put in frames, where they will be partially shaded from the full force of the sun; keep them moderately moist at the roots and quite free from aphides and red spider, for, if either of these insects be allowed to get possession of the plants, they will quickly injure the leaves to an extent that will seriously interfere with their flowering during the forthcoming winter. Give them sufficient air, but not so as to dry the atmosphere around them too much. Failure in the cultivation of Cyclamens may often be traced directly to exposing them in full sunshine in the open air, to loss of leaves through insects, and to keeping the roots too dry, with insufficient warmth in winter. Young bulbs raised from seeds sown last autumn should be well attended to, keeping them moderately close and moist, with plenty of light, but not too much sun; be careful never to over-pot these plants, 3-inch or 4-inch pots for the autumn-sown bulbs will, until further in the season, be large enough. They will do well in a compost consisting of three parts turfy loam to two of leaf-mould, with a good sprinkling of sand.

Spiræa (Hoteia) japonica.—Plants of this that have been forced or brought into flower in a greenhouse are often, when done blooming, set in any out-of-the-way corner and little attended to in the way of moisture, whereas, if properly treated, they would go on increasing year after year. By some they are turned out of their pots and planted in the open ground for the summer; in autumn the roots are taken up, divided, and again potted for forcing. This treatment is right so far as the planting-out goes, but, instead of deferring the division of the roots until the time when they are being potted, the division should take place now, when they are planted out; obviously in this way the roots will receive less check at a time when their flowering is more likely to be interfered with through it than now, before they make growth in the open air, and have all the summer to recover its effects. The soil in which they are planted should be moderately light and rich, and they must never be allowed to suffer from want of water.

Balsam and Globe Amarantus.—Seeds sown now will come into flower late in the summer when there is a comparative scarcity of greenhouse-blooming plants; they will succeed very well in cold frames after this time; but, if in a hot-bed that happens to be at work, the seeds will germinate more quickly. As soon as the plants are up and 2 in. high, put them singly in small pots, using rich soil—ordinary loam, three parts to two of leaf-mould and rotten manure in equal proportions, with some sand, will suit them perfectly.

Stoves.

The weather of late has been most trying to plant cultivators, for, during the early part of the month, strong winds were blowing from the north as cold and cutting as at any time during March; this, accompanied with clear sunny days, rendered much care necessary in giving air to keep down the temperature in the stove houses. It is not likely at this late season that we shall get a recurrence of such bad weather, but when cold winds prevail it is always better to allow the thermometer to run up considerably than to risk letting in air to come in contact with the young tender foliage that stove plants are now making. If the shades be kept down at such times, and plenty of moisture in the atmosphere maintained by frequently damping the floors, pathways, &c., a rise in the temperature to 90° or so may be allowed with advantage, and will be found far more congenial to the health of the plants than admitting a rush of cold air. With all the care that can be exercised in this way, it is surprising how rapidly plants dry under the influence of such weather, and much watchfulness is therefore requisite in keeping them properly supplied with water at the roots.

Achimenes.—Many of the quickly growing stove plants, such as Achimenes, Gloxinias, and others of that class that have filled their pots, and are getting well forward for flowering, can scarcely be kept too wet if potted in loose, peaty soil with plenty of drainage. Under such conditions, with the proper amount of heat and abundance of moisture in the air, they will keep their colour and produce a quantity of large flowers, without which Achimenes have but a poor weedy appearance. In affording these the necessary shade, they are frequently kept too far from the glass, thus having an insufficiency of light, whereby they become drawn and are then of little value for decorative purposes. To secure a successful growth they should be placed in light airy positions where shade can be afforded them for a few hours during the hottest part of the day while the ventilators are open, after which, with a good syringing, it may at once be withdrawn from them, as they will stand a fair amount of sun when closed with a moist atmosphere surrounding them. Achimenes thrive well in pits or frames at this season, provided they can get a little artificial heat, such as by having a bed of gently-fermenting leaves or tan under them, the genial heat and moisture arising from which exactly suit their requirements. With the limited body of air such places afford it requires great watchfulness to keep their leaves from burning, and to prevent this it is necessary to have the shades on betimes in the morning before the sun's rays are too powerful upon them. Those that are sufficiently advanced to require support should be neatly staked and tied, giving the outer sticks a sharp inclination, that the plants may be spread out and have plenty of room for the lateral branches to grow without being crowded and drawn. Fine Privet twigs that were trimmed off during the summer and tied up in close bundles to dry make the neatest and best stakes for training and supporting Achimenes, as they are but little larger than the stems of the plants, and being of the same colour from retaining their bark, they are scarcely noticeable. Deal sticks or others made by hand, unless painted or coloured, are very objectionable, independent of the time and labour they take in getting them prepared, and therefore a stock of the above, as well as Hazel and Willow for training Pelargoniums and such like plants, should always be kept ready for use.

Gloxinias.—These require similar treatment to Achimenes as regards heat, light, and moisture, and when well grown, are among the most useful of summer-flowering plants. By keeping them well up to the glass, the blooms are much improved in substance, and consequently last a greater length of time on the plants or in a cut state than they otherwise would. Any seedlings that are up and sufficiently large to handle should at once be pricked off in peaty soil in well-drained pots or pans, and then placed in close, moist heat to give them a start. A sheet of glass laid over them and slightly tilted will be found of great service in helping them to get hold of the soil, which they will soon accomplish if kept gently syringed as occasion requires. By pushing these on for the next month or two, they may be had in bloom by the autumn, and will come in most useful to succeed old plants then going to rest. Where it is desired to increase the stock of any fine kinds, one or two of the lower leaves should be taken off as soon as of sufficient size and tolerably firm to be used for propagating purposes. They may either be put in whole or cut across the middle, but the former is the safest and best as being least likely to damp off through not having any cut part exposed to the air, or on which moisture can lodge. The leaves should be taken off with a short piece of the foot-stalk attached, and then inserted in small single pots in sandy soil. If then placed in a propagating box, or under bell-glasses, in moist heat, they will soon callus, and will begin to form tubers that will make fine flowering plants for next season.

Celosias.—The great improvement that has been effected in these of late renders them very acceptable plants, either for supplying cut flowers or for furnishing conservatories and greenhouses during the autumn. Good strains of them make most elegant pyramidal-shaped plants clothed with long, pendulous, brilliant-coloured inflorescence at the end of every shoot, and almost at every joint. These have, when well grown, a light, feathery appearance, and produce a striking effect, especially when seen under artificial light; they are, therefore, most valuable for dinner-table decoration, as small plants in vases or in a cut state for dressing epergnes, in which position they droop gracefully over the side and show up in pleasing contrast with the white damask cloth and other surroundings. Where showy plants are in request for furnishing purposes, such useful subjects as these should not be lost sight of, as they may be grown up quickly and at once discarded when they become the least shabby; but with ordinary care and suitable places in which to arrange them, they may be kept in fresh condition for at least three months. If seed be sown at once and the plants grown freely on when up, they may attain a large size by the middle or end of August, a time when gay flowering plants are generally becoming scarce. Celosias are rather subject to red spider, and to keep them clear of this pest they must be frequently syringed and never allowed to suffer for want of pot room or a proper supply of water at the roots. Owing to their rapid growth in a warm, moist atmosphere the plants draw up weakly and long-jointed, in which condition they are unable to bear the weight of their flowers without support, and when stakes have to be resorted to, it detracts much from their beauty. To avoid this they should be kept well up to the light and placed at a sufficient distance apart to allow proper room for sun and air to play freely amongst them. A common pit or frame having sufficient depth to hold a few leaves or other gently fermenting material in which to plunge them will be found more suitable than the stove, as, in the former position, they are more under command, and can be syringed and treated more in accordance with their requirements than when grown among other plants.

Cockscombs.—These, though not so graceful as Celosias, make a fine display when well managed, and, if sown now and similarly treated, will make fine, showy heads by the autumn, when they are sure to be acceptable for furnishing purposes. Both these and Celosias are gross feeders, and should have rich soils in which to grow. A fourth part of good, sweet, rotten manure to three parts of loam will be found to suit them well. Such masses of flower, in proportion to the size of the plants and the amount of foliage they carry, necessarily make large demands on the roots, and to meet this and keep them of a healthy, green colour, they should be assisted by a liberal supply of manure-water as soon as they begin to show bloom. If either be required for seed-saving purposes, they must be kept well apart, or both will be spoiled, so freely do they intermix and cross with each other.

Balsams, like most other free-seeding plants, have of late been considerably improved, and instead of the weedy, single-flowered subjects once grown, they may now be had almost as large and showy-looking as moderate-sized Camellias. To have them in perfection, they can scarcely be overfed, and should be grown in soil containing nearly half its bulk of manure, provided the latter be of a mild nature, such as can generally be obtained from old hot-beds that have been frequently stirred. If desired of large size, they must be kept shifted on, so as to hasten their growth as rapidly as possible, and until they are placed in their flowering-pots, the blooms should be picked off as they continue to show themselves. At each shift they receive the plants may be dropped lower in the soil, that the bottom branches may be pegged or tied down, so as to be level with the rim of the pot. To keep them short-jointed and stocky, they must be well up to the glass, and fully exposed to the sun, giving them plenty of air whenever the weather is favourable. No place in which to grow these surpasses a low house or pit, where they can receive a slight bottom-heat, in which, if syringed and shut up early, their growth will be most rapid. As soon as the pots are filled with roots, manure-water will be of the greatest assistance in developing their blooms and pushing out plenty of lateral shoots that will continue flowering after those on the main stems are over.—J. SHEPPARD, *Woolverstone Park.*

Orchids.

Any Orchids coming into flower should be removed to the cooler end of the house as soon as the first flowers expand, and left there until they are all open; they will be then prepared for removal into a cooler house while they are in flower without receiving any check. Take care that the flowers do not get wet, or they will be spotted, and will not continue in bloom nearly so long. This treatment of plants in flower is particularly useful if they be intended for exhibition or for the decoration of the dwelling-house, where they will last in beauty and without injury for a much longer period than if they had been left in a warm, damp house. Care should be taken that when in flower the plants should be placed where the sun's rays or the heat from the pipes do not reach them. At this season of the year the aphis or green fly is particularly troublesome, attacking the young growth and exhausting the sap; it is, therefore, of importance that they be kept down, and this can be done in a small collection by sponging them off with weak Tobacco-water; but, in larger collections, where time cannot be spared for removing them in this way, fumigation must be resorted to, although the operation is seldom accomplished without doing some slight damage to the plants. The chief danger of fumigating is when the material used is allowed to flare; but this difficulty is to be overcome by using a fumigating pot with a lid, which can be obtained at any of the nurseries; it is best to select dull, still evenings for the work, and to fumigate slightly three times in succession rather than once excessively. After fumigating, the house should be carefully shaded the next day, and less air than usual admitted. Coarse, strong Tobacco is undoubtedly the best to use. Liberally supply the New Grenada Odontoglossums, Masdevallias, and other growing plants with water, and see that they do not stand flat on the stages, thereby preventing the free escape of the water. Attend carefully to previous recommendations.—James O'Brien.

Indoor Fruit Department.

Vines.—As next year's crop entirely depends upon this year's treatment, see that those Vines from which fruit is gathered receive proper attention, viz., keep the house cool and the foliage healthy and clean until it withers and drops naturally, syringing it well with pure soft water to check red spider and prevent the border from becoming dry. Where manure is considered unsightly, a top-dressing of fresh soil raked over the surface once a week will prevent its cracking and give it a neat appearance. As the lateral growths should now be storing up nutriment for the coming season instead of making young wood, pinch them off. Keep all ripe Grapes cool and dry; ventilate freely and prevent moisture from settling on the berries; except in wet weather never permit the house to be shut up. Vines bearing a full crop of fruit should be well looked after at this particular stage of growth; the borders should be examined often and never allowed to become dry; where sufficient drainage exists they are not easily overwatered. Top-dress twice with cow manure during the growing season, and water copiously with manure-water; red spider will thus be rarely seen, and a good crop of fruit will be ensured. Ventilate freely on fine days, front and top air being beneficial, except under strong winds, when the ventilation should be moderated. Vines started late should be looked over often, removing all laterals on their appearance. Avoid the practice of allowing a heavy growth and cutting-out freely afterwards; take advantage of all the light possible, but do not overcrowd. Thin Grapes immediately they can be handled, as the operation can then be performed more quickly than when the bunches have become crowded, as is their invariable habit at this season of the year. Vines planted in the spring, as formerly recommended, will be growing rapidly, and should have daily attention as to tying up the young shoots, pinching out laterals, tendrils, and all unnecessary growths, allowing those side-shoots that are intended to be cut down next year as much light as possible; if for fruit, confine them to a single rod, stopping all laterals at two leaves. Let them receive no check from want of water; ventilate freely in fine weather as a preventive for warts, to which young Vines are very subject, and retain a little air during night. Pot Vines started early will be getting to their full length, and should be stopped 7 ft. from the pot; allow one leaf to each lateral; tie the shoots into their proper places; an abundance of light and air will ensure fruitful canes; avoid over-watering, but do not allow them to droop for the want of it; if insects attack them, hand-wash at once.

Peaches.—Supply fruit-bearing trees continually with water, never allowing them to become dry before the colouring of the fruit, after which gradually withhold water, and keep them dry during the ripening process. Expose the fruit freely to the sun, giving plenty of air; keep the young shoots thinly tied down, giving them all the light attainable. Water well the trees from which the crop has been gathered with a syringe or garden engine frequently during the week, retaining the foliage to the last in a clean healthy state; assist all old trees with manure-water. In succession houses attend to disbuddings, thinnings of fruit, &c.; where the trees are young and growing gross, allow them to carry a heavy crop, which will assist in checking the growth and strengthen the fruit-bearing powers of the trees for the succeeding year. Syringe freely on fine days and water well inside borders; where green fly exists, fumigate well with Tobacco on two successive nights.—J. Hunter.

Kitchen Garden.

The cold north-easterly winds that have prevailed for the past week or ten days, although to a large extent ungenial, have not been altogether devoid of benefit, as they have dried the ground and thus have assisted in bringing up arrears of seed-sowing, hoeing, and surface-stirring. It is to be hoped, however, that we are on the eve of a change for the better, as the earliest vegetables look most wretched and sadly require warmth both of soil and atmosphere. The season being so late, many of the operations mentioned last week will still require execution, and other operations will continue to present themselves, one of the foremost being the preparation of ground that has been cleared of Broccoli for such crops as Celery, late Peas, Carrots, Turnips, &c.; Winter Spinach, as soon as the round or summer kind is ready, should also be dug in so as to have the ground ready for successional plantings of Cauliflowers and the earliest batch of Savoys, both of which should have prompt attention. Successional plantings of Coleworts and other sorts of Cabbage should be made as ground becomes vacant, and as soon as the earliest are fit to cut, let all the old stumps be cleared away. Another sowing of Peas should be made in quantity according to the demand, and after this it will be advisable to sow them in shallow trenches, especially on light soils; our own practice on light soil is to have all ground on which they are grown trenched; when sown, a deep drill is made with the hoe, and only part of the soil therefrom is used for covering the Peas, the remainder being scattered over the surface of the ground; before staking, the drill is filled to the ground-level only, and the rows thickly mulched with litter or rotten manure. For such soils, surface-mulchings are of immense importance to all vegetable crops, and repay all trouble involved in their application by the extra quality of produce, and the labour saved in watering; sow Spinach between the rows of Peas, and destroy all previously sown as soon as it manifests the slightest tendency to run to seed. Lettuces may now be sown on the ridges formed by making the Celery trenches, and Radishes do equally well in a like position; both require to be sown at frequent intervals, to keep up a constant supply. Seedlings of Basil and Sweet Marjoram recommended to be sown in heat a few weeks ago may now be transferred to the open ground, and all other herbs should be examined, and any that are becoming short should be replaced by division, or seedlings, as the case may be; old plants of Sage and Thyme, if cut over now, will soon make new growth, though it is well to renew them from seed at least once in three years. Parsley will soon require thinning, and, if necessary, another planting should be made with the thinnings. The rows should be 1 ft. asunder, and the plants 6 in. apart in the row. On heavy land, the driest part should be selected for this crop, or it may fail in the winter. If, as in our own case, ground is not likely to be at liberty for some time to come, the earliest-sown Broccoli should be temporarily pricked off, and otherwise encouraged to grow up sturdily; small batches of Walcheren and Snow's should be permanently planted as soon as convenient, in order to insure a supply after the autumn Cauliflowers are over. Should the weather continue dry, Turnips and Radishes will require copious waterings to prevent them becoming hot and stringy. Cauliflowers, also, would be benefited by the same treatment, and these should always have one good watering with liquid manure. I find liberal treatment to be the best preventive of "clubbing." See that Carrots, Turnips, French Beans, and Potatoes in pits and frames have plenty of water, and as the latter are dug up the frames may be utilised for the growth of Chilies, Capsicums, Tomatoes, or Cucumbers, and also for the hardening off of all kinds of plants that are eventually to be transplanted to the open ground.—W. Wildsmith, *Heckfield.*

Palm Leaf Water Baskets and Baths.—In Ceylon plaited baskets of Palmyra Palm leaf are made large enough for baths about 3 ft. in diameter and 2 ft. deep. They are double, the inner lining being from the leaf itself, and the outer skin from stripes of the hard central rib of the leaf, termed olah; they are plaited so closely as to be perfectly water-tight, and are sold for about 3s. each. They are made in other shapes, too, for lifting water from wells, and in the north of the island are universally used for this purpose.

The Flora Orientalis.—One of the most important works on descriptive botany in progress is Boissier's "Flora Orientalis," the third volume and first part of the fourth volume of which were published towards the end of last year. The first volume was published in 1867, and the last part issued brings it down to the Boragineæ. Beginning with Greece it takes in European Turkey up to Dalmatia and the Balkan Range; the Crimea, Caucasus (including the northern slopes), Egypt and Arabia to the tropics, Syria, Asia Minor, Persia, Beloochistan, Afghanistan, and Southern Turkestan, to about 45° N. lat.

Chalk and Ants.—Knowing the feet of the small-sized ant to be so constructed that they could ascend a tree if as smooth as glass, I concluded anything that did not offer a firm footing would prevent their ascension. Reasoning thus, chalk appeared to be the only thing to use. I scraped the bark on the trees in a ring about 2 in. wide around the tree, and then took a piece of chalk and rubbed it on the ring all round the tree till no green bark could be seen, and watched the result. The moment the ants' feet touched the chalk it offered no solid footing; it would fall back and not one could ascend.—Josiah Clark, in "Germantown Telegraph."

PAROCHIAL FLOWER SHOWS.*

Horticultural Societies at present are for lovers of flowers amongst the rich—who want them least. The poorer classes delight in "those stars which on earth's firmament do shine," and should, in every way, be encouraged to cultivate them. Our Divine Master was speaking to the poor when He said, "Consider the Lilies." And it is to the world at large that the great Lesson-book speaks of the Rose of Sharon, the Lily of the Valley, the Oleander by the stream, the Rose of Jericho, the Almond, the Apple or Apricot, the Gourd, the Vine, the Fig, the Olive, the Wheat, and the Darnel, the Cedar and the Palm, and many others, as the Box, the Myrtle, the Willow, the Tamarisk, the Anemone, the Coriander, &c. Plants are the relics of Eden; and on our way to Paradise regained, we may expect very much more than Briers and Thorns. Mungo Park took heart by seeing a tuft of Moss in the desert. Let a man cultivate flowers, and he will find it will often set the chimes going. Canterbury Bells are finer than St. Patrick's. It would be good for most of us to look oftener upon the Lilies of the field. Every man should, if possible, have his strip of garden. No tenant of even a room should be without a few plants in the window. As far as we are each individually concerned, we must not wait for the Millennium for the wilderness to rejoice and blossom as the Rose. Even in the wildest corners of the land Parochial Flower Shows are quite practicable. In Dublin I have long had an Annual Flower Show, and I would recommend every clergyman to do the same. The following was our list of prizes for 1875:—1. Three Prizes for the largest variety of Wild Flowers. 2. Two Prizes for the best arranged Bouquets of Wild Flowers. 3. Two Prizes for the best Bouquets of Cultivated Flowers. 4. Two Prizes for the largest variety of Ferns. 5. Three Prizes for the best Geraniums given in 1871. 6. Three Prizes for the best Flowers of any kind in pots. (These must have been in the possession of the exhibitor for at least three months.) 7. Three Prizes for the best window-sill boxes of Flowers. 8. Two Prizes for the best written copy of lines on Flowers. 9. Three Prizes for the best Flower Garden. Candidates to send their names and addresses a week beforehand. 10. Also four Prizes for Amateur Workmanship, such as carved work, fancy articles, &c. Now, the above will show how very simply the arrangements may be made and carried out. Several persons in city and country have asked me for these particulars, and several initiated Flower Shows last year, and more have determined to do so this year. With regard to the character of the prizes, this must depend upon circumstances. Plants and books about flowers are what I give as being most appropriate. A good plant, such as an India-rubber plant, or a small Palm, or a Cyperus, or a fine Acacia, are things of beauty and welcome. Until the value of the exhibition was understood, I gave the prizes from my own purse; but now persons gladly assist in defraying the expenses by paying a small fee for admission. I hope the time will soon come when our Horticultural Societies will deign to smile on efforts to cultivate flowers under difficulties, and will offer prizes for small gardens in the smoky city. For the present I must appeal to my brother-clergymen to organise parochial Flower Shows as a real means of blessing.

Gnats in the Garden.—As The Garden must naturally and legitimately take an interest in all that aids or obstructs the progress of gardening, and as ladies are not weak supporters of the objects of The Garden, it would be a real boon to them if any receipt can be given to protect them from the attacks of gnats, which it has been observed have, as well as midges, become much more venomous than formerly, and their attacks have commenced much earlier in the year and continued much later than heretofore; so severe, indeed, are the effects of their stings, that in two or three localities they have actually remained masters of the field, as it has been impossible for ladies to stand in the garden under the infliction; the inflammation, and the bumps raised on the forehead, on the head, the temples, and the cheeks, have caused not only disfigurement, but, in some cases, suffering for days together. There are some few favoured individuals whom they do not attack, or but very slightly; but with others the case is very different. The only thing tried and recommended by a great sufferer has been benzine (the liquid used to take stains out of silk and cloth), which has a very strong scent, but this has been by no means effectual, for the scent very soon passes off in the air, and attacks are recommenced at every vulnerable point wherever the scent is not overpowering on the clothing. Surely there must be something which is objectionable to gnats and midges.—Ll.

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* By the Rev. Alfred Clayton Thiselton, Incumbent of the Episcopal Chapel, Upper Baggot Street, Dublin. In the "Irish Church Advocate."

TREES AND SHRUBS.

THE CARAMANIAN PODOCYTISUS.

The Caramanian Podocytisus, of which the annexed are illustrations, was discovered in 1855 by M. Boissier, near the village of Gulegboghas, near the Cilician Gates, growing freely in the calcareous soil of that mountainous region. It is a bushy shrub, of vigorous habit, throwing out a number of strong shoots covered with flowers and leaves. The latter, which are trifoliate and petiolate, are thick and tough, of a pale green colour, and brightly polished on the upper surface. The calyx of the flower resembles that of the Laburnum in form, is of a rusty-red colour, and helmet-shaped. The flowers are bright yellow above, paler below. This charming plant, which begins to flower in July, continues in blossom until autumn, and, on that account, ought to be highly valued, as late-flowering shrubs are by no means plentiful. It may be easily propagated either by means of seed or grafting. If seed be used, it should be sown in March or April in pots or pans filled with light soil. If grafts be employed, they may be put on Laburnum stocks, so as to form either dwarfs or standards, according to taste. Young seedling plants will require to have their roots protected from frost by leaves or litter. Q.

THE BLACK SPRUCE.

The Black Spruce, the common name of this ornamental and useful Conifer, has reference to the very dark green hue of its foliage. Botanically it is known as Abies nigra. Its home is in the northern and eastern parts of North America. It is said by Michaux to be found in its greatest abundance between 44° and 53° of north latitude, and 55° and 75° of west longitude. This would include the southern part of Labrador, the Rupert River region, the provinces of Quebec, Nova Scotia, and New Brunswick, all of Maine and the northern part of New Hampshire, Vermont, and New York. Its real range, however, is much greater than this, for it extends southward along the Alleghany Mountains as far as North Carolina, westward to Wisconsin, and northward to the 65° parallel, ceasing to grow but a few degrees this side of the Arctic circle. It delights in cold, hilly and mountainous regions, attaining its largest size and growing most abundantly on those moderate elevations, ridges, or slopes where the soil has a ready drainage and at the same time retains considerable moisture by reason of its mossy, shaded surface and goodly percentage of dark vegetable mould. No matter how rocky the soil, the tree still flourishes. It also grows freely in low swampy lands and about sphagnous marshes, but in such localities it is inferior in size and quality. The Spruce, as it occurs in the forest, usually attains an altitude ranging from 50 to 80 ft. and the basal diameter of the trunk is from 1 to 2 ft.; but occasionally trees are found that have a diameter of nearly or quite 3 ft. The trunk is comparatively straight, very gradually tapering upwards and free from branches two-thirds to three-fourths the entire length of the tree. It is covered with a thin grayish-brown bark slightly roughened with small scales. This is not deemed valuable for tanning purposes, but it affords a very good covering for shanties and the log houses of backwoodsmen. The altitude of the tree increases by the annual growth of a single leading terminal shoot, which in young and moderately vigorous trees advances about 1 ft. in a season. This mode of growth is characteristic of all our Pines and Spruces. As this terminal shoot pushes its way upward it sends out annually from its base a whorl of branches. These branches are gradually shorter as we pass from the lower to the upper whorls, each successive one having one year's less growth than its immediate predecessor. They, therefore, as a whole, give to the tree a more or less regular conical outline. In process of time the lower branches decay and drop off, thus leaving a naked trunk. It is this peculiar mode of growth that makes these trees so available for ship masts and flag-staffs. The branches of the Spruce are directed slightly upwards and are surrounded on all sides by the leaves. These are usually about half an inch long, somewhat quadrangular and very narrow or needle-shaped. They remain on the branch about five years. The cones are pendent, ovate or oblong-ovate, three-fourths of an inch to 1½ in. in length, and are somewhat variable in colour before maturity. The shape of the cones serves as a convenient character by which to distinguish the Black Spruce from the White, whose cones are narrow and almost cylindrical. The wood is light and strong, and has considerable elasticity. It is of a brighter colour than either the wood of the Pine or the Hemlock. Though decaying quite rapidly when exposed to the weather it is quite durable when protected. It constitutes an important element in the lumber trade. Spruce boards are deemed more valuable than Hemlock but less

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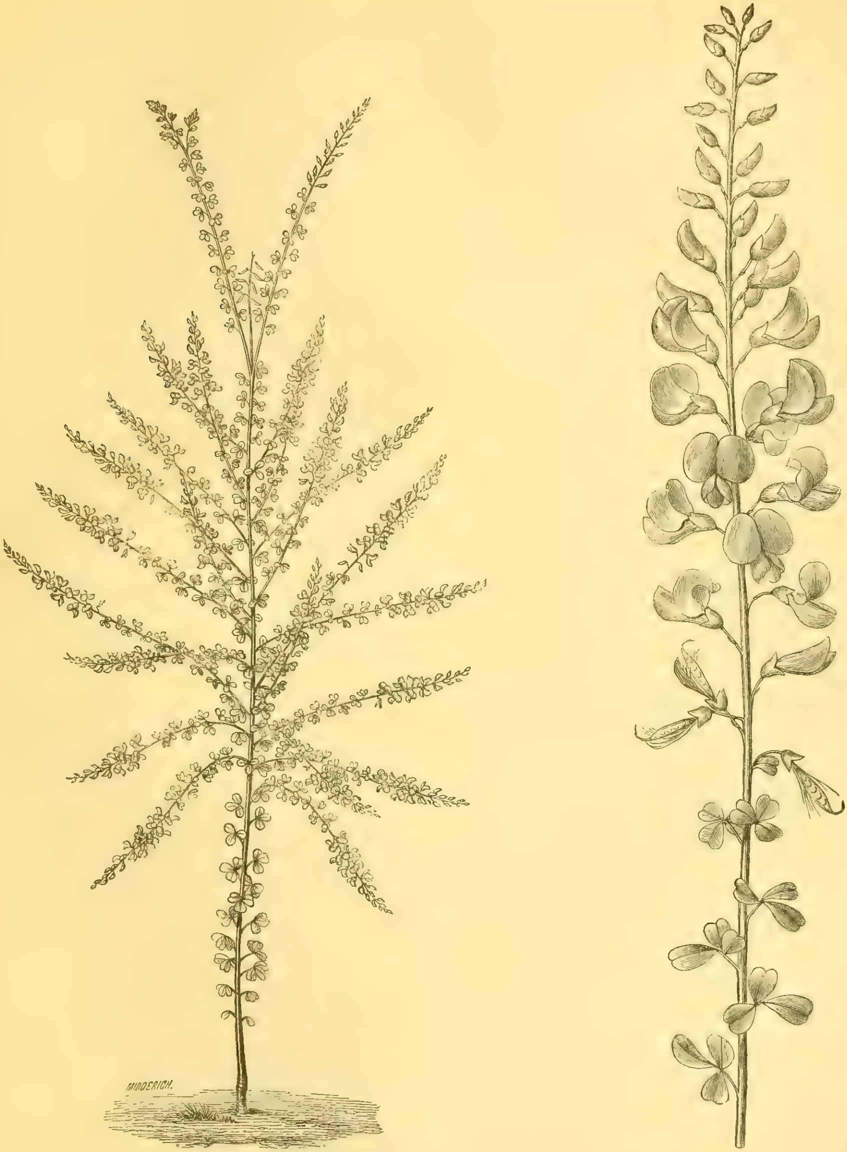
* Read before the Albany Institute, by Charles H. Peck



THE CARAMANIAN PODOCYTISUS (P. CARAMANICUS).

valuable than Pine boards, because of a greater liability to warp and crack. They are harder than Pine and are therefore more difficult to work. Spruce is sometimes used for the frames of buildings and for floor timbers, but generally it is cut into boards, door or window casings, siding, flooring, &c. In some localities the making of Spruce shingles is an important branch of industry, but such shingles are generally considered inferior to those made from Pine or Hemlock. From the New York census returns for 1865, we learn that the amount of Spruce lumber produced in the preceding year was 71,000,000 ft., more than six-sevenths of which was produced by the counties bordering on the northern forests. The value of this at 20 dols. a thousand would be nearly 1,500,000 dols. The lumbermen of these northern counties go far back in the woods along the principal streams, cut the logs and draw them to the water-courses. In the spring, when the water is high, they are floated down the stream to the mills where they are to be sawed. In this way deep inroads have been made in the forests so that they are not now the vast unbroken wilderness they seem. To one passing along the Upper Hudson or the valley of the Sacandaga in summer time, the numerous piles of Spruce logs that have lodged against rocks or on low banks, speak plainly of the rapid destruction of the Spruces and of the swiftly contracting areas that are darkened by their shadows. And yet these are but the small portion of logs that fail to get through to their destination while the spring freshets last. If we suppose 5000 ft. to be the product of an acre it would require more than 14,000 acres to furnish the 71,000,000 ft. above mentioned. In the vicinity of Rock River, in Hamilton County, many large Spruces have been left standing on land cut over by lumbermen. Why were these trees left? An examination of the trees reveals the fact that they are affected by what lumbermen call seams. A chink or crack extends along the trunk following the course of the grain of the wood. If the grain be straight the seam also is straight, if the grain be oblique the seam winds obliquely round the trunk. They sometimes extend nearly the whole length of the trunk. They penetrate the wood deeply, often reaching nearly to the centre, and they therefore detract much from the value of the tree for lumber. Such trees are consequently left standing when they grow far from the lumber market. If the tree be crossed-grained, the seam renders it worthless except for fuel. Externally these seams are bordered by a more or less abundant exudation of resin, which in its dried or hardened state is popularly known as Spruce gum. It is not improbable that the permanent character of the seam is due to the presence of the gum which prevents the healing of the injury. This gum is generally coated by a velvety stratum of black fungoid filaments, which give a blackish appearance to the seams. Electricity and excessive cold have been suggested as possible or theoretical causes in the production of seams, but neither is to my mind wholly satisfactory. When electricity rends the bark of a tree it carries the injury to the ground, losing itself in the earth, but the Spruce seams generally cease before reaching the extreme base of the tree. Besides, a tree struck by the electric current seldom survives the shock, while seamy Spruces live and thrive. Probably not more than one tree in fifty, on an average, is seamy. Why, then, should one tree be checked by excessive cold, while forty-nine others in the same locality and exposed to the same temperature remain unharmed? It is barely possible that an unusually thrifty growth or an excessive surcharging of the tender tissues of the sapwood with moisture might give rise to conditions in which intense cold would produce a rupture, but it is hardly probable. It would appear to be an easy matter to determine the cause of the seam by an investigation in its earliest stage or soon after its commencement, but I have never yet seen one in such a condition, and do not deem it worth while to waste time in speculating upon the cause of this curious feature.

Types of Black Spruce.

A complete knowledge of the Black Spruce requires an acquaintance with its varieties. Some plants are much more fixed and uniform in their characters than others. The Spruce is much more disposed to be variable than the Hemlock. Some varieties depend upon external conditions, circumstances, or influences, which are easily detected; others seem to be constitutional or inherent in the plant itself. Their causes are not easily discernible. To one familiar with our evergreen forests the ideal or type of the Spruce is that of a noble tree with a tall, straight, erect trunk supporting a somewhat conical head of dark green spray. But the tree varies greatly from this type according to its age, the character of the soil, and the altitude of its station. In young trees growing in open places or on cleared lands it is common to find the entire trunk occupied by branches, the lowest whorl being but slightly raised above the surface of the earth. This differs from the young trees of dense woods only in retaining its lower branches for a longer time. In open sphagnous marshes a form occurs so marked in its appearance that in some localities it has received the name of Bastard Spruce. The branches, which frequently occupy the whole trunk, are generally very slender, the internodes short, and the leaves pale. The tree has a feeble, starved, or sickly aspect, and does not attain a large size. A cross section of the trunk shows the concentric rings which mark the annual growth of the wood lying close together, which, with the short internodes of the branches, indicate a very slow growth. These trees are too small to be of any value. They are rarely fertile. In wooded swamps and low lands a larger form is common. It scarcely differs from the ordinary forest tree except in its inferior size and quality. It affords a poor quality of wood, and is sometimes cut into piles to be used in the construction of dykes and foundations of bridges and large buildings. It is not worth much for lumber. It is intermediate between the Bastard Spruce and the Forest Spruce, having the distinct trunk of the latter and the starved, unthrifty look of the former. Another form occurs in the Adirondack region, and is said to grow also in New England. The foliage has a silvery or glaucous hue, on which account it is sometimes mistaken for the White Spruce. Its cones, however, have the shape of ordinary Black Spruce cones, and enable us to correct a very natural mistake. The cause of this variation is not easily perceived, unless it is the result of cross fertilisation between the Black and the White Spruce. The two preceding forms manifestly depend upon the character of the soil. A large form with cones of unusual size and wood of soft texture was once described as a distinct species. It received the name Abies rubra or Red Spruce, but it is now deemed only a variety of the Black Spruce. Its range is northward. According to Michaux, in Nova Scotia its wood is used in making fish barrels, on account of the ease with which it is worked. But the most remarkable variety is found on the highest summits of the Adirondacks. Remarkable as it is, I have seen no description nor even mention of it in botanical works. It is the variation of the tree into a mere procumbent shrub, so small that it offers but little impediment to him who would walk over it. These bushes are more or less flattened in outline, the branches issuing mainly from the two opposite sides of the trunk as in the Ground Hemlock. They grow in dense patches completely covering the ground, and in numerous instances with their apices all pointing the same way. They have the short internodes and the short pale leaves of the Bastard or sphagnous marsh variety. Sometimes the leaves are tinged with a glaucous hue as in the variety previously mentioned. I have never seen cones on this dwarf form, nor is it probable that it ever produces them. Its stunted form speaks plainly of the struggle of a hardy plant for existence in unfavourable conditions. A thin soil, the prevailing low temperature of high altitudes, fierce blasts of winds and the crushing weight of heavy snows all conspire to keep down anything like successful tree growth on the tops of these mountains. The two extremes of the Black Spruce have now been noticed. The one a noble forest tree 50 to 80 ft. high, with a well-formed trunk 1 to 2 ft. in diameter at the base, supporting a symmetrical top or head of branches covered with dark green leaves; the other a dwarf of the mountain top, scarcely a foot high, with no distinct trunk and without strength to maintain an erect position, its stunted branches spreading two ways and bearing short, yellowish-green leaves, the whole looking very much as if it were a feeble branchlet of the former thrust obliquely in the ground. What thoughts do they suggest concerning the variability of the species, what concerning its stability? Surely a remarkable degree of variation, a singular tenacity of life, and a wonderful power of adaptation to alter conditions are manifest. The Spruce shows itself capable of maintaining an existence under most adverse circumstances.

Spruce Mistletoe.

Perhaps no plant is wholly free from the attacks of parasites, but some are much more liable to these attacks than others. One species may be subject to the attack of a single parasite, another, of a half-dozen or more. I have sometimes thought that the greater the susceptibility of a plant to variation the greater its liability to parasitic attacks. Certainly the variable Black Spruce is obnoxious to many parasitic foes. Arceuthobium pusillum is one of these. Like many other parasitic plants it is destitute of true leaves. Botanically it is related to the Mistletoe, and, by way of distinction, it might be called the Spruce Mistletoe, since it is thus far peculiar to that tree. It often occurs in abundance, fringing the younger internodes of the living branches by the multitude of the plants. Having once attacked a tree it continues to prey upon it year after year, growing with its growth and thriving with its thrift. The remarkable fact about it is that thus far it has been detected on those Spruces only which grow in swamps or on and around sphagnous marshes. It has not yet been seen on the typical forest Spruce. Though this plant was first discovered but little more than three years ago, it is now known to occur in five counties of the State. I have not heard of its discovery beyond the State boundaries. It is not positively known to kill the tree which it attacks, but it is probable that it sometimes does. Dead trees occur which bear the marks of its former presence.

Spruce Destruction through Pine Beetles.

In August a collecting trip was undertaken in the vicinity of Lake Pleasant, Hamilton County. While there it became apparent to me that I was in a region where the Spruces were dying. Standing near the outlet of the lake and looking upon the distant mountain slopes toward the north-east, east, and south, patches of brown appeared here and there mingled with the usual dark green hue of the forest. The inhabitants told me that these brown patches were groups of dead Spruces, that the Spruce trees were then rapidly dying and had been for two or three years previously, and that in consequence the value of the woodland was greatly diminishing. One of the most conspicuous of these brown patches was on the slope of Speculator Mountain, a little more than half-way from the base to the summit. Preparations were therefore made to visit this locality. Once on the ground it needed but little observation to satisfy me that the destructive process was then in operation. The ground under some of the Spruces was thickly strewn with their fallen leaves, yet green, and every agitating wind was bringing down more of them. The bark of these trees and of others already dead was perforated in many places with small round holes scarcely ⅛ in. in diameter. Upon stripping a piece of bark from the trunk of one of the affected trees, the apparent cause of the mischief was at once revealed. The surface of the wood and the inner layers of the bark were abundantly furrowed by the winding and branching galleries of a small bark-mining beetle, an insect known to entomologists as the Hylurgus rufipennis (Kirby), though the wings are by no means always red as the name would indicate. Both the mature insect and its larvæ occurred in countless numbers under the bark of the dying and recently dead trees. In a single instance they were accompanied by a much smaller beetle of similar shape and habits, the Apate rufipennis (Kirby), but the former is evidently the chief agent in this unprofitable business. These insects excavate their passages between the bark and the wood, eating away a part of both. Their extended work is therefore equivalent to a girdling of the tree. Their numerous galleries form an intricate network of furrows on all sides of the trunk, and traverse one of the most vital parts of the tree, the newly formed and forming layers of wood and bark. The furrows are shallow on the surface of the wood, rather more than half their diameter being in the bark, but their effect is to interrupt the circulation of the nutrient juices, and finally to destroy all vital action. The perforations in the bark, by admitting moisture, doubtless work more or less injury. The surface of the sap-wood and the corresponding inner surface of the bark of living trees are discoloured for a short space on both sides of the furrows, as if the injury exerted a poisonous or deadening influence on the tissues in its immediate vicinity. This was clearly seen in a tree which had been but slightly injured, there being but few furrows, and those merely longitudinal ones without lateral branches. Each occupied the centre of a discoloured stripe about ½ in. broad, but which usually extended from 2 in. to 4 in. up and down beyond the extremities of the furrows. In another tree there were groups of furrows separated by considerable intervals, the central portions of which intervals had a whitish, fresh appearance when the bark was first peeled, but after a few moments of exposure to the air the whole surface of the wood had changed to a dull, dead, brown colour, indicating a diseased or unnatural condition of the surface tissues. The foliage on this tree had not yet lost the green hue of life, but had commenced falling to the ground. Small trees are rarely attacked. In the localities visited, from one-half to two-thirds of the Spruces with a basal diameter ranging from 1 ft. to 2 ft., were either dead or dying. Trees of this sizes are the most suitable for lumber, and consequently the most valuable. The smallest affected tree noticed had an estimated basal diameter of about 10 in. In this case the attack appeared to be a failure, for so much resin had oozed from the wounds that the work was obstructed. The galleries were scattered and single, and their authors were found dead, each in its furrow. No larvæ were present, and the apparent attempt to establish a colony in this tree had thus far failed. But it may be that this tree had only been attacked for the purpose of obtaining food, and had not yet been brought into that sickly, languishing condition thought by some entomologists to be necessary to induce the establishment of a colony, the deposition of eggs, and the development of larvæ. For it is said of the Scolytus destructor, a bark-mining beetle that sometimes proves very destructive to Elm trees in Europe, that the adult insects first attack healthy trees for the purpose of obtaining food, and when by this means the vigour of the tree has become somewhat impaired, the female deposits her eggs in her galleries. Then the rapidly increasing numbers soon destroy the life of the tree. In the vicinity of Lake Pleasant the affected trees are upon the mountain slopes or on dry ridges where the Spruces are especially abundant. And we might naturally expect that the insects would be attracted to and carry on their depredations most extensively in those localities where the material on which they work is most abundant. In the valleys I saw no trees affected by them, and yet they doubtless carry on their destructive work in the low lands where Spruces abound. I see no reason why they should not. In some localities their ravages have already ceased. On the slopes of an elevation a few miles south-west from Speculator Mountain there are two groves of dead Spruces. Many trees in both were examined, and, though all the dead ones bore unmistakable marks of the former presence of the beetle, not one could now be found either in the adult or in the larval state. What had caused them to disappear? Surely not the lack of material on which to work, for several large living Spruces yet remained. This leads to the consideration of remedies. Doubtless there are natural agencies whose free operation has a tendency to check the ravages of these insects and to prevent their excessive multiplication, but there are times and localities in which these opposing agencies are inefficient or inoperative, and then these destructive insects multiply rapidly and their ravages become painfully apparent. It is then necessary that man himself should do something to protect his property from these active little foes. It was noticeable that many of the dead trees in the two groves just mentioned had their bark so chipped by woodpeckers that the general hue of the trunk was a reddish-brown instead of the usual grayish-brown. Here then is a possible explanation of the cessation of the ravages and the absence of the insect. Here is doubtless the indication of one of Nature's antidotes to the mischief. The woodpecker is the natural foe of such insects. With its long beak and barbed tongue it extracts them as a dainty morsel from beneath the bark. It is quite probable that these birds had congregated in these two localities in sufficient numbers to completely stop the ravages of the insects. A few were seen at work on the affected Spruces of Speculator Mountain, and if not interrupted they will probably in due time succeed in checking the ravages there also. The protection of these birds is to be enumerated among the means to be employed in checking the malady of the Spruces. They are the friends of the forests and the allies of man. How insignificant the insect, yet how capable of injury! How lightly we esteem the woodpecker, yet how indispensable are his services!

Abies Engelmannii or commutata.—In reply to your query, "Is this tree in cultivation in England?" allow me to say that in nurseries at least it is very well represented by plants varying from a few inches to 3 ft. in height. Our tallest plant measures 3 ft. 10 in. It is of moderate growth, which, combined with its dense, broadly-conical habit, and the intense blue of its rather long, formidable foliage, together with its unprecedented hardiness, render it one of the best, if not the best, of ornamental Spruces. I have never seen it attacked by any of the insects that often render plants of the same heights of other species of Spruce unsightly. When better known it will be found in its proper place, dotting and beautifying the lawn and pleasure grounds of both Britain and Ireland.—G. S., *Elvaston Nurseries, Borrowash.*

Kerria japonica on Walls or Pillars.—Although this well-known shrub will flower freely under even the most adverse circumstances, and will grow in the very poorest of soils, yet it well repays a little extra attention. It forms a handsome bush in shrubbery borders, but it is upon the whole, perhaps, most effective as a wall or pillar plant, either intermixed with or closely associated with the Cydonia japonica; both flower at the same time, and their colours, harmonising well together, produce a striking effect. It is readily increased by division of the roots or by cuttings. As regards pruning, by cutting out the old flowering shoots annually and encouraging the strong shoots that spring from the base, much finer blossoms will be secured than if left undisturbed.—J. GROOM, *Henham.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The White Wistaria.—This is now in London gardens the queen of hardy climbers, its long and graceful racemes unfolding without much injury from the cold winds. It deserves to be as frequently planted as the blue kind, which I train as a self-supporting pyramid on the lawn as well as on walls.—V.

The North American Sylva.—Over 300 trees and more than 800 woody species of plants are believed to be embraced in the flora of the United States, and of the trees 250 species are tolerably abundant in one region or another, 120 of them growing to a large size.

Robinia hispida.—Can any of our readers procure specimens of the fruit of this plant for Professor Gray, of Harvard University, Cambridge, Mass.?—

THE FRUIT GARDEN.

REMEDIES FOR THE VINE PEST.

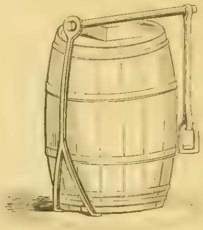
In a recent number of the "Annales de Chimie et de Pharmacie," M. Dumas, one of the most celebrated of living chemists, publishes a long and elaborate article on the best means of destroying the phylloxera or Vine pest. About five years ago M. Dumas, was deputed by the French Government, in company with several other eminent chemists, to investigate the action and efficiency of the numerous remedies proposed for the destruction of this insect, and he gives us full details of all his experiments in the article in question. It is, however, rather with results than experiments that we have to deal, and the outcome of M. Dumas' labours is that there is no remedy so thoroughly effectual and convenient as a solution of a salt known to chemists as the sulpho-carbonate of potash. Amongst other remedies proposed the most efficient seemed to be the bisulphide of carbon, a thin, volatile, transparent liquid obtained by passing the vapour of sulphur over red-hot charcoal, which is much used as a solvent of india-rubber. Holes, 2 ft. or 3 ft. deep, were made with a crowbar or auger in the earth around the roots of the Vine attacked by phylloxera, and a certain quantity of the liquid was poured in which, by gradually diffusing itself amongst the roots, effectually destroyed the pest. But there were many objections to the use of this remedy. Its easy inflammability and its noxious vapour rendered its use extremely dangerous; besides which it not only killed the phylloxera, but seriously injured the Vines. M. Dumas' experiments soon led in the direction of the sulpho-carbonates, and he ultimately fixed on the sulpho-carbonate of potash, as we have said, as the most fitting salt. This salt, which is, roughly speaking, a compound of sulphur, carbon, potash, and water, is exceedingly unstable, and becomes decomposed even by the slight proportion of carbonic acid that is in the air. It is applied in the form of a weak solution by means of holes bored in the soil. As the liquid penetrates amongst the roots, the carbonic acid, which is always contained in the rain-water which has percolated the soil, decomposes the salt—the vapour of bisulphide of carbon and gaseous sulphuretted hydrogen being given off, and carbonic acid taking their place. Both bisulphide of carbon and sulphuretted hydrogen are poisonous to the phylloxera, and as the change takes place gradually, the danger of injury to the Vine itself is not so great. When all the sulpho-carbonate is spent it becomes changed into bicarbonate of potash, a powerful fertilizer, so that the insecticide, having done its work, becomes transformed into manure.

The sulpho-carbonate of potash is rather dear at present, but, as its use increases, it will become cheaper. It does not seem to have entered the London market yet, but the Paris price, as quoted by M. Dumas, is 200 francs per 100 kilogrammes, or rather less than 10d. per lb. At any rate, any large wholesale chemist would be able to procure it. The best way of using it is to have a solution made having a specific quantity of 1·357, which should be prepared by a chemist. A pint of this solution mixed with two or three gallons of water should be used for each square yard of surface. If the ground be very dry, the quantity of water may be increased to six or even eight gallons, but this must be left to judgment and experiment. Half-a-dozen holes, 2 ft. or 3 ft. deep, should be bored round the Vine and the liquid poured in, fresh being added as it is absorbed by the soil. Three months after the same dose should be repeated. As a rule, early spring and autumn are the best seasons for applying it, but if the pest be discovered to be at work any time before July the sulpho-carbonate should be resorted to at once, as the winged insect reaches maturity in that month. If discovered in the winter, the treatment should not be delayed beyond the beginning of March, when the insects are just waking from their winter sleep. French Vine-growers object to the use of sulpho-carbonate of potash on account of its dearness. This may be an obstacle in a country where, as happened last year, the Grape crop was so large that thousands of tons rotted on the ground because there were no casks to put the wine in; but in England the case is very different. C. W. Quin.

Grapes Over-thinned.—Many thin their bunches of Grapes too much in the centre, according to Mr. Douglas, writing in the "Journal of Horticulture." The result of this is to spoil the appearance of them when they are placed upon the table—they "fall all over the place" instead of lying compact and firmly as they ought to do. A fruit salesman told us that a certain grower always had a good price for his Grapes, because the berries stood up so firmly in the baskets owing to the correct manner in which the berries were thinned out. Those bunches that are too much thinned fall about, and the bloom is rubbed off the berries. It is difficult to teach anyone to thin Grapes by writing about it. Everyone must learn from experience. Even a practised man is sometimes at fault until he knows to what size the berries are likely to grow.

A NON-PATENTED APPLE BARREL HEADER.

Apples require to be packed very firmly in order to enable them to travel with safety; for, if loosely packed, they come to market in a bruised condition. Apples may be allowed to fill the barrel to about 2 in. above the rim, and will bear to have the head brought down to its place. Thus packed they may receive very rough usage without injury. The header referred to consists of a bar of half-inch square iron rod, with a large eye or loop at one end, and at the other end two diverging hooks which grasp the bottom of the barrel. The bar is bent to fit the curve of the barrel. When in use, the hooks are placed beneath the lower rim of the barrel, one end of a short lever is placed in the eye, and the lever rests upon a block, which is set upon the head of a barrel properly placed in position. A strap or cord, with a loop or stirrup at one end, is fastened to the other end of the lever. The foot is placed in the loop or stirrup, and the weight of the body thrown upon it brings the head or lid of the barrel in its place; the hands being free, the hoops can be driven down tightly without the help of an assistant. Without the use of the cord and stirrup, two persons are required to head barrels, but with the aid of these the services of one can be dispensed with.—"Canada Farmer."



WILD AMERICAN GOOSEBERRIES.

I.—Let us begin with the species which a gardener might say was a cross between a Gooseberry and a Currant, namely—

Ribes lacustre, well marked by having racemes of numerous small flowers, in the manner of a common Currant, the blossom as small and as open, and the very small reddish berries beset with some scattered bristles. This abounds through the north, in cold wet woods, from Newfoundland to the Pacific. There is a dwarf variety of it in the higher Rocky Mountains and north-westward, smaller in all its parts, and with fewer flowered racemes. In some publications I have called it R. setosum, a species said to have been raised by Loddiges from seed sent by Douglas. It was received from Messrs. Loddiges under that name thirty years ago, and cultivated in the Cambridge Botanic Garden. Yet it is not the plant published and figured by Lindley, as will be presently seen. I pass to—

II.—The true Gooseberries, with peduncles bearing only one or two at most four flowers, and calyx-cup bell-shaped or tubular. These may be roughly arranged in three sets by the colour of the flower.

(1.) Yellow-flowered. The only one of this subdivision is—

R. leptanthum.—It belongs to the Rocky Mountains of Colorado and New Mexico, and to the drier parts of the Sierra Nevada. It was first collected by Dr. Edwin James in Long's expedition, but was named and described long afterwards, from Fendler's New Mexican collection. It is an insignificant, small-leaved, and slender-flowered species. The dried flowers do not seem to have been really yellow, but they are said to be so by the collectors in the Sierra Nevada, where, however, the flower is generally shorter, broader, and more downy. We would ask those who have met or may meet with it in the Rocky Mountain region if the flowers be really yellow or yellowish there.

(2.) White or greenish flowered, sometimes with a dull purplish tinge. To this division belong all our eligible Gooseberries, and here lie the main difficulties in the way of distinguishing the species. Two of these may be known from the rest by having the lobes of the calyx decidedly shorter than the tube, and their berries are apt to be prickly. They are—

R. setosum, a white-flowered species, with a narrow cylindrical calyx-lobe. It takes its name from the slender scattered prickles on the branches; but these are sometimes wanting, this being an inconstant character in all the species. The young berries are either perfectly smooth and naked, or beset with a few bristly prickles. This is the R. oxycanthoides of Hooker's Flora, but certainly not of Linnæus. It belongs to the Saskatchawan region, extending into Montana and Wyoming. No. 107 of Dr. Parry's Wyoming collection is a small-leaved form of it, which was mistaken for R. leptanthum; but the flower is perfectly smooth, evidently white, and the style deeply cleft and hairy towards the base. I suspect that this species inhabits the north-western shore of Lake Superior. Botanists visiting that district should look for a species with pure white flowers, a half-inch or less in length, with cylindrical tube, and stamens decidedly shorter than the lobes.

R. Cynosbata.—This Dogberry, as the name denotes, is well marked by the usually strong prickles on the fruit, weak prickles on the stems (the thorns sometimes wanting altogether, but occasionally well developed), slender peduncles, and especially by the broad bell-shaped tube of the greenish flower. It is common from Lower Canada to Illinois, and in the Alleghanies to Virginia. It is found occasionally with the berries as well as the stems wholly unarmed. In the rest of this section the calyx-lobes are decidedly longer than the short, bell-shaped tube; and the berries are smooth and naked, purple, sweet and pleasant-tasted.

R. gracile is the most distinct of them. It is well named on account of the slender peduncles, long and narrow calyx-lobes, and almost capillary filaments. The latter are half an inch long, generally connivent or closely parallel, and soon conspicuously longer than the oblong linear calyx-lobes, which, being reflexed in anthesis, as in all these species, then expose the whole length of the stamens to view. The flower is whiter than in the rest of these species, having barely a slight tinge of green. The berry is pretty large, and is prized in cultivation under the name of Missouri Gooseberry. It is the R. Missouriense of Nuttall in Torrey and Gray's Flora. It is also, as the figure shows, the R. niveum of Lindley in the "Botanical Register;" and from the character it is probably the R. triflorum of Hooker's Flora. It ranges from Tennessee and Illinois to the northern borders of Texas, and north-westward into the Rocky Mountains. In Michaux's Flora the habitat is the mountains of Tennessee; but I suppose it will not be found in the Alleghanies.

R. rotundifolium is a species of the Alleghany Mountains, ranging northward and eastward into New York and the western borders of Massachusetts. Prof. Dewey long ago collected it near Williamstown; and Prof. Tuckerman's Amherst catalogue gives West River Mountain, on the authority of Hitchcock. I wish to obtain flowering specimens of it from all parts of its range; for the limits between it and the following are obscure. Its range is more southern and comparatively restricted; the flower is narrower, and the stamens longer, becoming a quarter of an inch in length and nearly double that of the calyx-lobes; the peduncles also are longer; but this character does not hold out well. Although it belongs to a district most of all familiar to botanists, I have seen few flowering specimens of it. A specimen is preserved in the Torrey herbarium, and is the European Gooseberry. R. triflorum Wild is, I think, rightly referred to R. rotundifolium, an earlier name.

R. oxyacanthoides.—We must bring this name into use in place of R. hirtellum (which is generally inappropriate), for no reasonable doubt remains that it is the Hudson's Bay Gooseberry, figured by Dillenius, upon which Linnæus founded the species. It the common smooth-fruited Gooseberry of New England and the whole region northward, and it extends westward to and beyond the Rocky Mountains, and even into the Sierra Nevada of California. It has shorter peduncles than the preceding, but this distinction is by no means absolute; the flower is broader, and the stamens merely equal or only slightly exceed the calyx-lobes. It is the R. saxosum of Hooker, whose R. oxyacanthoides is R. setosum, while that of Michaux is R. lacustre.

R. divaricatum, of Douglas, takes the place of all the preceding on the Pacific side, and ranges from the lower part of California (in a downy form, R. villosum of Nuttall) to British Columbia, meeting R. oxyacanthoides in the interior. There is a form (the var. irriguum of Douglas), of which we know too little, which comes near to R. rotundifolium. The species is pretty well marked by its slender peduncle and pedicels, three to four flowered, oblong and livid-purple calyx-lobes, and short and broad tube; the stamens about a quarter-of-an-inch long, and thrice the length of the broadly-wedged and nearly white petals. The flower, ovary included, is from a third to half-an-inch long. The berries are said to be excellent.

(3). Red-flowered species. These all belong to the Pacific side of the Continent, are large-flowered, and their berries are unfit to eat.

R. Lobbii.—I am under the necessity of giving a name to this little but apparently very distinct species. It is figured in the "Botanical Magazine," t. 4931, as R. subvestitum, from a Californian plant sent by the late Mr. Lobb to Messrs. Veitch & Son. It should be particularly looked for in California, north of San Francisco Bay, and along the coast to British Columbia. Perhaps the Californian habitat is an error. The species may be distinguished by its dark, purplish-red calyx of half-an-inch in length, not counting the ovary, nearly white petals half the length of the stamens, very glandular but unarmed ovary, and especially by the short, oval, and very blunt anthers, which are dotted with a few warty glands on the back. These short and blunt anthers are shared with all the preceding species, but not with the following.

R. Menziesii, well marked by its sagittate anthers, with a mucronate tip. The flowers are as large as in the preceding, or considerably larger, but variable in this respect, and of a similar purplish-red colour; and the berry is large and prickly, usually densely, sometimes sparsely so; the prickles sometimes strong and spiny, sometimes shorter, bristle-like, and when young gland-tipped. It extends from the southern part of Oregon through the whole length of California, and varies exceedingly. R. subvestitum of Hook and Arn., as to all the specimens of Douglas, on which it was founded, is a form of the species not far removed from the typical. R. californicum and R. occidentale of Hook and Arn. seem different enough in the original and in many other specimens, being very small-leaved and mainly glabrous. I had formerly (in the fourth volume of the "Pacific Railroad Explorations") united these two with R. subvestitum. I am now of opinion that all are forms of R. Menziesii. They are, however, commended to the notice of native Californian botanists.

R. speciosum.—The Scarlet-flowered Gooseberry of California is so distinct that a separate section has been provided for it. Besides the bright colour and ample size of the flowers, its calyx-lobes do not turn back, and are often only four; the stamens protrude for an inch or more, and the rather dry berry is few-seeded. Its synonymous names are characteristic: R. stamineum of Smith, for the remarkably long stamens; R. fuchsoides of Berlandier, for the resemblance to a Fuchsia-blossom. In England, where it is hardy, it is prized in cultivation for its brilliant red flowers, garnished by the shining and almost evergreen leaves. Trained to the wall of a house, it may be carried to the height of 15 ft. or 20 ft.—Asa Gray, in "American Naturalist."

Rust on Grapes.—In my opinion Mr. Smith (see p. 444) is mistaken when he says that rust occurs when Vines are in bloom, or when Grapes are setting. If rust occur at such an early stage of growth, why does it not make its appearance sooner on the berries than it does? Perhaps Mr. Smith will enlighten us on this point. My Grapes had not a particle of rust on them until quite the end of April, since which time they have gradually got worse. They are now colouring fast. I am aware that a dry atmosphere is not necessary for Grapes when in bloom, or when they are setting, and for that reason the atmosphere of my house has been kept moist since I first started it. I am certain, therefore, that a parched heat has not caused the Grapes to rust in my case.—G. H. G.

The Woolly Aphis, or American Blight.—M. Charles Joly, the Vice-President of the Central Horticultural Society of France, gives a remedy for woolly aphis, which seems more promising than the thousand-and-one panaceas which are so constantly proposed for eradicating this troublesome pest. 7 lbs. of soft soap, 1 lb. of train oil, two or three handfuls of soot and flour of sulphur are to be mixed with a pailful of lime-water. When thoroughly incorporated, throw in sufficient powdered clay to make the mixture of the consistency of batter. Spread a cloth beneath the affected tree, and scrape off all the Moss and bark which seem to be attacked by the aphis, taking care to trim the rough portions of the bark, and to clear out the crevices. Remove the cloth, and burn everything that has fallen on it, and paint the whole of the trunk of the tree and the lower branches with the soap mixture, giving an extra dose to all crevices and cracks. Autumn is the best time for the operation, as the winter rains wash the soap mixture off the tree down to the roots, amongst which a few of the aphides that escaped the soap mixture may have taken refuge. It cannot be too frequently repeated, that the woolly aphis always takes up its winter quarters round the collar of the root—a fact that is too frequently lost sight of.

STORING LOAM.

In the culture of exotic plants and fruits no material is so generally indispensable as loam; it forms the staple of nearly every compost, and as it is very variable in character, it is needful to get it of the best quality, otherwise mistakes are sure to be made in making up composts; for what may be reckoned heavy or light loam in one district, may be a very different material in another, both mechanically and chemically. The top spit of old pasture land is the kind of turfy loam which a cultivator prefers to all others; but it may be heavy or light, brown or yellow, sandy or calcareous, according to the formation which underlies it—in some cases so light as to be fit for the culture of the most tender subjects, without additions in the shape of leaf-mould, peat, or sand; and in other cases so heavy as to be useless for most purposes by itself, but an excellent loam when mixed with any of the ingredients just named in the right proportion. Strong loam is the accepted name for that yellowish, somewhat adhesive soil, deficient in sand, which is usually considered proper for Wheat. It is not often formed upon a gravelly, chalk, or sandy bed, but more generally upon the clay itself, and in some places upon blue clay, or on those shaly formations, highly impregnated with iron, which sometimes overlie the coal measures—as in some parts of Yorkshire, where a very strong but good loam is found, that suits such subjects as Vines and Peaches, and, when reduced with lighter composts, all kinds of stove and greenhouse plants, particularly Cinerarias and Calceolarias, and other subjects which prefer a cool soil. On the same formation the Bramble renders the woods almost impassable for miles, and in some places the Elderberry is equally rampant, and the common Wood Hyacinth and Foxglove may be seen flourishing as they do nowhere else, while in the open fields Buttercups and Daisies, the Cock's-foot and similar Grasses, invariably indicate the same kind of soil, which, however, is generally thin and naturally well drained. It has been said that where such timber trees as the Beech, Oak, Elm, and Spanish Chestnut thrive, the soil is generally good; but for horticultural purposes such trees are not a safe guide, for they all thrive and live long in soils of very different character. Specimens of the above, which it would be difficult to excel, are found growing indiscriminately in chalk and limestone, almost pure sandy soils, and in both the strong yellow and red loams. The surface vegetation is the best guide. A good stiff sample of Wheat, Docks, Nettles, the stronger-bladed Grasses, Daisies, and Dandelions in abundance, and a rather coarse sward, usually indicate a heavy loam, and, accordingly as they predominate or otherwise, its texture may be pretty correctly judged.

Time for Obtaining and Storing Soil.

Cultivators do not care to get turf, whether peat or loam, when it is sodden, but like it to be moist, and rather than store it in a dry state, would prefer to have it wet. Most people know how difficult it is to soak a body of soil when once it has become thoroughly dry, in which condition turf often is when taken off the pastures in summer, and if stacked in that state, it hardly ever gets moistened, but cuts up crumbly and dry, the worst state in which it can be for any purpose. In cutting into an unprotected ridge of soil at the end of 1872, after 60 in. of rain had fallen, it was found that the moisture had hardly penetrated farther than the outer crust—the turves had been put up dry, being a chance lot that had to be fetched when they could be got. On another occasion a Vine border, or rather part of one, which was furnished with chopped loam in a dry state, was found to be still in almost the same condition a foot from the surface at the end of the season, and that led to an explanation regarding persistent attacks of red spider upon the Vines growing in that portion of the border. It had been copiously watered like the rest of the border, but it had not absorbed the moisture to the same extent; and, in order to insure this, furrows were drawn and holes dibbled all over the surface, and filled with water two or three times a day for a week or more. Loam is not so bad as peat, however, for when the latter gets too dry the water runs through it like a sieve. For these reasons it is preferable to stack the turves when they are tolerably moist. They will drain and get drier, but not wetter, though stacked out-of-doors, if formed with a good sharp ridge at the top like a haystack, and smoothed with a spade, so as to throw off the water. Except for border making and similar purposes, turf should be stored for one year before it is used, or at least until such time as the roots of Grass are killed; but after that the sooner it is used the better, as decomposition goes on rapidly, and in two years' time the fibre on which the value of turf chiefly depends is generally quite gone, and nothing but a fine mealy soil left, good enough for ordinary purposes, but apt to run into a dense impervious mass when used by itself. Of course, the character of the compost, after lying awhile, depends upon the way in which the turves were taken up. If they be pared off more than 2 in. or 3 in. thick, they are sure, unless the pasture be old and deep, to have a quantity of superfluous earth and stones attached to them, which considerably reduces the amount of vegetable fibre when the compost comes to be chopped up for use; besides, as there are usually strong objections entertained by proprietors to having their parks stripped of the sward, it is not advisable, particularly on shallow soils, to take any more earth than is required. When the turf only is taken, no damage worth mentioning is done, except the eyesore created for the time; but a few loads of garden refuse scattered over the ground, harrowed in, and a few Grass seeds sown upon it, will soon remedy matters.

Artificial Loams.

With regard to preparing loam for potting purposes, an eminent authority in such matters has said that those soils in which the different constituents that compose them are most intimately blended and mixed are the best for plants, chiefly because their food is everywhere readily accessible. No doubt there is truth in this, and experience bears out the statement; but cultivators do not act upon this principle as a rule, for what are called lumpy or turfy composts, which are really not mixed at all, are preferred by them, and it is easy enough to pick out the different materials, such as loam, peat, and leaf-mould with the hand. The value of such composts depends not more upon their mechanical than their chemical combination, and, to promote this, a thorough disintegrating and mixing of all the different substances are necessary. On this principle it is practical enough to manufacture what may be called an artificial loam, and the suggestion may be worth the notice of those who usually have not command of turf from pasture lands. Very heavy loams, or even clay, if allowed to become tolerably dry, may be broken up into fine particles with the back of a spade—or frost will accomplish the same end—and if, when in this condition, an equal quantity of river sand, and one-third or more of finely-reduced leaf-mould or tufted horse-dropping, be added to it, and all thoroughly mixed up together, a compost equal to, and not unlike, good loam will be the result. I have tried such composts, and would not venture to say that they were inferior in any respect to those composed of the usual material, *i.e.*, turfy loam, leaf-mould, and other matters. No one need be short of a suitable compost for potting purposes who has clay for a staple, and can find sufficient sand and thoroughly decayed vegetable mould, whether from Grass, leaves, or litter, to mix with it. The common soil of the garden is the only loam which many can procure, and with such material at their disposal they need not complain. To get it in good condition they should obtain it from a quarter that has been rough-dug and exposed to the frosts, which reduce the most tenacious clods to a fine meal, and it may then be shovelled up in that condition very dry and stored in the shed, when it will always be fit for use. Such a soil, with the usual additions in the shape of manure, sand, and leaf-mould, according to its texture, may be employed without any hesitation for most greenhouse and stove plants that require loam. All soils which have a tendency to settle down into the consistency of putty—and even turfy loams, if heavy, do this eventually—are unfit for plants alone, but add sand in sufficient quantity, and their tenacity is broken up, and you can almost do anything with them. The root action of plants is yet a comparative mystery to us, and cultivators have been, perhaps, a little too dogmatic on the subject of soils, and too particular, thereby engendering a timidity among the half-experienced, which has no doubt, in many instances, been an obstacle to progress, for people do not attempt those things, as a rule, which they are taught to believe they have not the means of accomplishing. There is little doubt that plants are distinctly affected by the character of the soil in which they grow, and particularly by its texture, whether it be hard or soft; but experience seems to prove that any wholesome soil, freely pervious to air and moisture, and containing the necessary elements of plant food in an accessible form, is a perfectly suitable root medium, whether prepared from turfy loam and peat, or more simple and easily procurable materials.—Chef.

Fruit Trees and Roses in Dorset.—I paid a visit the other day to my old friend Mr. Radclyffe, at Okeford-Fitzpaine, and was much struck with the beauty of the foliage and total absence of blister on over 116 Peach and Nectarine trees that I found in his garden. The situation is much exposed, and the wind was blowing bitterly from the north-east. There is not a full crop, but a good sprinkling, and I do not know that I ever saw trees in such fine condition. Mr. Radclyffe's Roses, his other hobby, have been much injured by the severe weather. Many have been cut down to the ground; but many more sheltered were forward in bud, and in good condition. He expects to have 1000 in fine bloom by June 12; the others, amounting to some 1500, will be later.—W. Marriott, *Down House, Blandford.*

SOCIETIES AND EXHIBITIONS.

ROYAL AQUARIUM FLOWER SHOW.

MAY 16 & 17.

THIS was undoubtedly the most attractive flower show which we have had this season, and the arrangements were all that could be desired. Most lovely were the groups of Roses sent for competition, and especially the fresh and floriferous specimens contributed by Mr. Charles Turner and Messrs. Paul & Son, of Cheshunt. Than those from Mr. Turner we have never seen more beautiful specimens, every flower and leaf of which were as near perfection as possible; Mr. Paul's, being a little earlier, were just a trifle past their best. Among amateur growers, Mr. Ellis and Mr. Moorman had well-grown collections. Messrs. Jackman & Sons, of Woking, showed a choice group of specimen Clematises, including some of their new varieties, and select groups of fine-foliaged plants came from Mr. W. Bull and Mr. B. S. Williams, while Messrs. Cutbush & Sons and Mr. A. Ratty furnished some attractive groups of greenhouse Azaleas. Hardy flowers were well represented by collections from several exhibitors, and of Orchids there were good collections from Mr. B. S. Williams, Messrs. Rollisson, and Mr. J. Ward.

First-class Certificates.—These were awarded to the following new plants and florists' flowers:—

Azalea Jean Vervaene (Turner, Slough).—This is a very pretty variety, the flowers of which are salmon-rose in colour, edged with white. It is evidently a free-blooming kind, and one which will make a useful decorative plant.

Azalea Flambeau (Turner).—This has vivid crimson flowers and a compact habit; it is also a free-growing and a profuse-blooming variety.

H. P. Rose John Stuart Mill (C. Turner).—A bright red Rose, large and full, and good in form and substance. It has frequently been certificated before.

H. P. Rose J. B. M. Camm (C. Turner).—A bright rosy-pink flower, very large and full, but of special interest, on account of its rich, full fragrance, which is similar to that of the old Provence Rose.

Tea Rose Jean Ducher (C. Turner).—This is similar in form to Gloire de Dijon, but much deeper in colour. It is a most desirable variety, and well deserves culture.

Aralia elegantissima (W. Bull, Chelsea).—A graceful stove shrub, having digitate serrate leaflets of a dark bronzy-green colour, margined with brownish red. It forms an elegant table plant, and will be useful for all kinds of decorative purposes.

Pritchardia grandis (W. Bull).—One of the most stately and distinct of all Palms, having large, dark-green, fan-shaped leaves, borne on stout, erect petioles. It has previously been certificated, and would soon become a favourite were it more plentiful than it is.

Kentia Mooreana (W. Bull).—A robust and graceful stove Palm, having recurved pinnate foliage of a deep green colour, borne on stout arching petioles. It succeeds well in an ordinary plant stove, and is in all respects a very desirable plant.

Dracæna Goldieana (W. Bull).—Of all Dracænas this is the most distinct, having ovate acuminate leaves of a dark green colour, striped, or rather barred with silvery-grey. It has previously been certificated, and is well deserving of culture.

D. Rex (W. Bull).—This and the following are distinct varieties belonging to the ordinary coloured-leaved section, and both are well worthy of culture for decorative purposes.

D. triumphans (W. Bull).

Katakidozamia Hopei (W. Bull).—A robust and handsome Cycad, having a scaly stem and long arching leaves, which are very regularly pinnate. It is a welcome addition to a group of handsome decorative plants now rapidly rising in popular favour, and well deserves attention.

Pyrethrum aureum laciniatum (Osborn & Sons, Fulham).—This is a useful addition to golden-leaved carpet bedding plants, and an improvement on the old Golden Feather, inasmuch as it is more elegantly cut into slender segments, the colour being a clear soft yellow.

Clematis Princess of Wales (Jackman, Woking).—This is in the way of Lucy Lemoine, but is a little improvement on that variety; it has large double white flowers, and is well deserving of culture.

Clematis Countess of Lovelace (Jackman).—This is a large double-flowered variety, the segments of which are a rich purplish-lilac colour. It is the best double variety in the whole group.

Trichomanes Bancroftii (Rollisson & Sons, Tooting).—A fresh green stove filmy Fern, having finely divided dark green fronds, forming tufts only an inch or two in height. It is well worth careful culture.

Aralia Veitchii gracillima (Rollisson & Sons).—This is a most elegant form of the now well-known type, from which it differs in having more slender leaflets of a pale grey colour elegantly crisped along their margins. As a table plant or for ordinary decorative purposes it well deserves attention.

Woodwardia radicans cristata (B. S. Williams, Holloway).—A strong-growing Fern, which differs from the type in having the apex of the fronds and the principal divisions regularly crested. It will afford variety in a collection of cool house Ferns.

Polystichum lepidocaulon (B. S. Williams).—A distinct and handsome species, the fronds of which are simply pinnate, the end of the rachis being prolonged in a curious proliferous manner.

Zamia intermedia (B. S. Williams).—A graceful and fresh green cycad, having a brown scaly trunk, whence rises the arched pinnate foliage the whole forming an elegant vasiform plant.

Araucaria Goldieana (B. S. Williams).—A graceful Conifer, with bright green foliage, and one likely to be useful as a decorative plant for the conservatory.

Primula cortusoides maxima (R. Dean, Ealing).—A strong-growing Primrose, which bears trusses of rosy-white flowers on a tall and slender scape. It is quite distinct from all others, and will prove very useful either for pot culture or for ordinary decorative purposes.

Roses.—To the general excellence of these we have already alluded. In Mr. Turner's collection we remarked examples of Duke of Edinburgh, a vivid crimson-scarlet variety; Madame T. Levet, a full bright rose: Juno, pale rose; Edward Morren, a large, full, rosy variety, flushed with salmon; Madame Victor Verdier, vivid crimson; Paul Perras, a wonderfully fine specimen; Beauty of Waltham, a crimson-purple kind; Celine Forrestier, a lemon-yellow Tea; Madame de St. Joseph, a delicate creamy-white Tea-scented variety, with a salmon centre; Victor Verdier, a bright fiery rose, the backs of the petals being silvery-lilac; Maréchal Vaillant, a crimson-purple variety, very full; and Anna Alexieff, a delicate rosy variety, of good form and habit. Taken as a whole, this collection was as near perfection as possible. Messrs. Paul & Son, of the Old Nurseries, Cheshunt, also showed a beautiful group, in which we noticed Horace Vernet, a deep crimson-purple flower; Anna Alexieff, Juno, Celine Forrestier, Madame Levet, and the following, which were not in the first-named group, viz., Princess Mary of Cambridge, a cupped pale rosy flower; Charles Lawson, a full and brilliant rosy variety; Camille Bernardin, a well-formed rosy-crimson kind, and Marie Baumann, a distinct rich, crimson-purple, and one of the best varieties in the class to which it belongs. Among collections of 20 kinds, in 8-inch pots, Messrs. Paul had the best group, Mr. Turner being second. Messrs. W. Paul and Son, of Waltham Cross, showed a miscellaneous group of Roses in pots, and also some fine collections of cut flowers, tastefully arranged on fresh green Moss, in large circular baskets. These, being backed by a row of Orchids and Palms, and fringed along the front with Isolepis, formed one of the most attractive arrangements in the show. In the class for 24 cut Roses, Messrs. Paul and Sons, of Cheshunt, and Mr. Charles Turner, had excellent stands.

Hardy Flowers.—Of these some charming collections were shown, in which we remarked the following, viz., Erigeron multiflorum, a glossy-leaved plant, having large, white, Daisy-like flowers; Carex argenteus, an elegant variegated variety; many beautiful varieties of Trollius, and Anemone sylvestris, with Snowdrop-like buds, and pure white flowers. In Mr. Parker's collection we noted fine masses of Solomon's Seal; Phlox Nelsoni, a lovely white-flowered variety, spotted with lilac; Iris spectabilis, with numerous rich purple flowers, and the sky-blue I. florentina. The delicate rosy Spiræa palmata, and its white-flowered ally S. japonica, were represented by two handsome specimens. A pot of the lilac and white-flowered Erpetion reniforme was much admired, as were also specimens of Pæonia uniflora; P. tenuifolia, and the deep blue-flowered Lithospermum prostratum; we also observed a brilliant mass of the scarlet Anemone fulgens, and with it were associated large clumps of white Daisies and Iberis Garrexiana, Poet's Narcissus, and a very fine plant of Orchis foliosa. In the class for cut flowers of hardy plants Mr. Parker had the most effective group: it consisted of Scillas, Bluebells, Tulips, Peonies, blue and purple Irids, Spiræa japonica, Alyssum orientale, Iberis, Trollius asiaticus, and two attractive potfuls of the snow-white Aponogeton distachyon. Mr. Roberts, gardener at Peterborough House, Fulham, also had a choice group, as had likewise Mr. R. Dean. Alpine auriculas came from Mr. C. Turner, and Mr. R. Dean, Mr. Turner, and the Rev. H. H. Dombrain, also sent groups of show varieties.

Fine-foliaged Plants.—Of these Mr. Bull showed one of the best groups perhaps ever seen; among other plants it contained Dracæna Goldieana, a kind with zebra-striped leaves not unlike those of Phalænopsis Schilleriana, and Croton spirale, with dark bronzy-green coloured foliage, every leaf being twisted like a corkscrew; Adiantum gracillimum, a beautiful Fern, to which we have frequently alluded in terms of praise; Pandanus Veitchii, in fine condition; and Croton volutum, a kind with curled ram's-horn-like leaves. The same collection also contained a fine plant of the golden-blotched C. majesticum; Pritchardia grandis, one of the rarest and noblest of all Palms; Paullinia thalictrifolia, with delicately cut Fern-like foliage; Phyllotænium Lindeni, a distinct and effective large-leaved Arad, with ivory-white veins; Kentia Mooreana, a robust and graceful decorative Palm; and a fine specimen of Encephalartos Vroomii. Mr. B. S. Williams had a well-grown group, in which we noted examples of Adiantum gracillimum, Croton Wisemanni, Gleichenia rupestris glaucescens, one of the rarest and most elegant of Ferns; Maranta Makoyana; and Linden's Phyllotænium, backed up by some graceful Ferns, Palms, and Pandanads.

Table Plants.—Nearly all the exhibits in this class were above mediocrity, the best being sent by Mr. W. Bull; in this we remarked elegant little specimens of Aralia leptophylla, Croton spirale, Pandanus Veitchii, Geonoma gracilis, one of the most elegant of all dwarf Palms; Aralia elegantissima, a kind with slender pedate leaflets, coarsely serrated, and of a dark bronzy colour; Croton majesticum, Dracæna amabilis, Panax excelsa, a kind with elegantly-fringed, pinnate foliage; Dracæna Cooperi, variegated Cyperus, and the elegant fan-leaved Thrinax argentea. Messrs. Rollisson and Sons, who were second, showed good plants of Aralia Veitchii, Cocos Weddelliana, Croton Wisemanni, and Dracæna gracilis.

Fruit.—From Mr. Earley, of Valentines, Ilford, came a very good collection of late Apples, the varieties being Red Beefings, Cluster Golden

Pippin, French Crab, Dumelow's Seedling, King of the Pippins, Mother Pippin, Dredge's Fame, Five-crown or London Pippin, Golden Russet and others; from the same exhibitor also came Black Worcester and Catillac Pears, evidently in good condition.

A list of the prizes awarded on the occasion will be found in our advertising columns.

ROYAL HORTICULTURAL SOCIETY.

May 17th.

At this meeting Messrs. Veitch & Sons showed a beautiful group of rare Orchids, to which a Davis medal was unanimously awarded. In this group one specimen, a single one of Odontoglossum nævium bore between twenty and thirty fine spikes of slender-petaled purplespotted flowers, and to this, as an example of superior culture, a gold Banksian medal was awarded. Sir Trevor Lawrence also contributed a well-grown group of Orchids, among which a vigorous plant of Masdevallia Harryana deserves notice, being not only a distinct variety, but also one which had evidently received the most careful culture. In the same group was a form of Aerides (falcatum) Larpentæ, with buff-coloured sepals and petals, described more fully below. Mr. Ollerhead, gardener to Sir H. Peek, Bart., furnished one of the finest clusters of Dwarf Plantain (Musa Cavendishii) which we have yet seen, its weight being considerably over 90 lbs. Mrs. Lloyd Wynne sent cut blooms of the lovely scarlet-flowered Embothrium coccineum, a shrub which is perfectly hardy in sheltered positions, at least in the more southern parts of the country.

First Class Certificates.—These were awarded to the following new and rare plants.

Boronia elatior (Veitch & Son).—A very slender and graceful Australian greenhouse plant, bearing a profusion of bright carmine flowers and buds among fresh green finely cut foliage. It promises to become a decorative plant of the highest possible value, and its elegant sprays of foliage and flowers seem well adapted for cuttings.

Cypripedium silligerum (Veitch & Son).—This is a robust hybrid, a cross between C. barbatum and C. lævigatum, and has broad, glossy, bright green leaves, with indications of the dark markings of C. barbatum. The flowers are solitary and larger than those of any other hybrid Lady's-slipper with which we are acquainted. The petals resemble those of C. Dayii, but have a few glossy warts on the upper margin; the sepals are greenish-white striped with purple, the lip being of a uniform brown tint. It is very distinct and effective.

Azalea indica Jean Vervaene (Veitch & Son).—This is a variety possessing good form and substance, the flowers being of a bright rosy-salmon colour margined with white. It is quite distinct, and will be found valuable either for decorative purposes or for exhibition.

Aralia Veitchii gracillima (Veitch & Sons).—A very slender and desirable form of the now well-known type.

Clematis lanuginosa violacea (C. Noble, Sunningdale).—This is a robust variety with large leathery dark-green somewhat glossy ternate foliage, and elegantly frilled six-rayed flowers, each of which measures 6 in. in diameter, and is of a dark satiny-blue colour, faintly flushed with claret down the centre of each petal. As it belongs to a very hardy group, and is quite distinct in colour from the old C. lanuginosa, it will doubtless prove to be a valuable hardy climber.

Double-flowered Cineraria King Alphonso (E. G. Henderson & Son).—This is a dwarf dense-habited plant, bearing bright rosy flowers 1 in. in diameter, and as double as those of the purple-flowered Senecio Jacobæa, which indeed they closely resemble in colour and general appearance. As the flowers last longer than those of the single, varieties it well deserves attention as a decorative plant.

Aerides Mendelii (Sir T. Lawrence).—This is a very distinct form of the very variable Aerides Larpentæ, or, as it is more frequently called in gardens, A. falcatum, from which it differs in having buff-coloured sepals and petals instead of white ones. It is quite distinct as a garden plant, and were it and its ally—A. crassifolium—more plentiful, both would be desirable plants in the most select collection of Orchids.

Variegated Broccoli (Harley).—A dwarf compact form of common Broccoli in which the centre of the leaf is of the purest milk white margined with green. If it can be perpetuated by means of seeds it will be useful as a decorative plant.

Orchids and other Plants.—Messrs. Veitch & Sons showed a choice and effective group of rare Orchids, Palms, hybrid greenhouse Rhododendrons, and other decorative plants. Among Orchids we remarked four vigorous plants of the delicate rosy-flowered Odontoglossum vexillarium, all differing one from another in the shape of flower or in brightness of colouring. The largest plant bore twenty-seven flowers on six spikes. One pale variety of exquisite form had radiate-rosy markings at the base of the lip, and was altogether one of the most chaste and beautiful of the whole group. A strong plant of the golden-flowered Oncidium Marshallianum bore twenty-six flowers on a long branched spike. A vigorous plant of Cypripedium Dominii was furnished with four flowers on two spikes, the individual blooms resembling those of C. caudatum, but in colour more glossy brown. Its parents were C. caudatum and C. Pearcei, and in general habit of growth it resembles the last-named, but it is much more robust. A specimen of Dendrobium Bensoniæ bore upwards of forty white yellow crimson-blotched flowers on two erect grey pseudo-bulbs. Lælia Walstenholmiæ, a plant having the habit of L. elegans and flowers like those of a pale L. purpurata, had two spikes, the largest of which bore seven flowers; and on a plant of the soft golden-yellow Oncidium concolor we counted fifteen flowers. Among Cattleyas we remarked several good varieties of C. Mossiæ, and a vigorous specimen of the pale, rosy-petaled carmine-tipped C. Mendelii bore three two-flowered spikes. A large pan of the chaste white-flowered Cypripedium niveum, from Malaya, was much admired, its waxy-white flowers contrasting well with the dark green grey-blotched leaves. A plant of the rare Cypripedium Dayii bore two fine flowers, and a noble specimen of Odontoglossum nævium was furnished with twenty or thirty spikes. The rare Vanda Parishii bore a strong eight-flowered spike of sweet-scented blossoms; a very large plant of the Fox-brush Aerides (A. Fieldingii) had five long spikes of rosy-lilac flowers; Dendrobium thyrsiflorum, Epidendrum prismatocarpum, and Angulosa, Ruckeri, were also well represented. Sir Trevor Lawrence showed several very beautiful and well-grown Orchids, including a form of Aerides Larpentæ, having buff sepals and petals, named A. Mendelii, to which, as will be seen, a certificate was awarded. A very fine variety of Masdevallia, in splendid health and vigour, bore twelve large and richly-coloured flowers, the colour being a sanguineous carmine; a plant of the pretty little yellow-flowered Promenæa citrina bore seven or eight short-stalked flowers amongst its pale glaucous green leaves; a plant of Dendrobium cariniferum bore twelve glossy, whitish-petaled flowers, the lip being of a dull Roman-red colour. From Messrs. E. G. Henderson & Sons, Wellington Road, St. John's Wood, came an interesting group of dwarf-habited, large-flowered Mimuli. These formed compact little plants from 2 in. to 3 in. in height, bearing pale or golden-yellow flowers fully 2 in. in diameter, and variously spotted and blotched with crimson of different shades. These Liliputians, which are very distinct and beautiful, are greatly in advance of any other seedling Mimuli which we have hitherto seen. The same exhibitors also furnished two double-flowered Cinerarias, one having dark purplish-blue and the other bright rosy flowers. Mr. Green, Botanical Nursery, Holmesdale Road, Reigate, showed a fine mass of a dwarf pale-golden-flowered Iris, named I. pumila lutescens elegans, a kind which appears to be very floriferous, and well deserving of culture.

Fruit and Vegetables.—Messrs. Harrison & Son, of Leicester, contributed examples of their new Apple, Annie Elizabeth, in an excellent state of preservation; examples of a seedling Apple also came from Mr. W. H. Bland, of the Old Nurseries, Fordham, Cambridgeshire; Mr. Batters, gardener to Mrs. Willis Fleming, of Chilworth Manor, Romsey, Hampshire, showed four dishes of vegetables, amongst which were a dish of McLean's Little Gem Pea, Early Longpod Broad Bean, Moore's Cream Vegetable Marrow, and some excellent Walnut-leaved Potatoes. The seed of these was planted in 8-in. pots in February and the crop was ready for use the first week in April. These had all been grown placed on the shelf of a cool house. Mr. Potter showed a brace of Telegraph Cucumbers; and specimens of Cucumbers and Melons, affected by the Cucumber murrain, were shown by Mr. Sage. The fruits were said to exude pure pectic acid. Virgin soil was stated to be the only sure preventive, and Mr. Berkeley recommended the use of soil which is washed down chalk gullies by heavy rains.

NOTES AND QUESTIONS—VARIOUS.

The late Mr. Richard Headly's Tulip Sale.—The stock of Tulips and other florists' flowers that belonged to the late Mr. Richard Headly is to be sold by auction at Stapleford on Tuesday, May 23. Amongst the Tulips will be found the celebrated John Linton, Sarah Headly, John Thornley, and other fine kinds, and, besides the named varieties, there will be sold a large collection of valuable breeders. This sale affords a good opportunity for possessing a stock of the best kinds of Tulips and Ranunculuses.

Flower Gardens in Churchyards.—Dr. Tristram, the Chancellor of the Diocese of London, has just settled the terms of a faculty, which will be forthwith issued, to convert the churchyard of St. George's-in-the-East into a Flower Garden. We again hope that annual decorations merely will not be the only object in view in taking advantage of this decision, but that suitable trees will be planted.

Campanula pulla.—I am obliged to "Scholastika" (see p. 406) for directing my attention more particularly to this little Alpine Bellflower. Since reading his remarks I have ascertained that the plant I saw on the flank of the Schlern, is not, as stated in my letter from the Tyrol, C. pulla, but C. Scheuchzeri, which is a totally distinct plant from C. Morettiana.—Wanderer.

A Double Wild Primrose.—A very large and effective double-flowered form of the common yellow Primrose has been sent to us by the Hon. and Rev. J. T. Boscawen, who found it in an old Oak wood near Lamorran, in Cornwall, and fully a mile from any house, whence it is inferred that it is not a garden straggler. Its flowers are bolder than those of any double yellow Primrose with which we are acquainted. They are borne on stout scapes 6 in. in length, and as the variety is evidently very vigorous, judging from its foliage, it may prove to be a very desirable plant for decorative purposes.

The Virginian Lungwort.—I so rarely see Pulmonaria virginica in a really thriving state that I write to say I had that pleasure the other day. The plant was nearly 2 ft. high, and full of lovely flowers. It grew in an open position, in very sandy and deep soil. It is an old favourite that I hope to see more frequently henceforward. It probably would thrive admirably on the margins of Rhododendron clumps, the soil of these being very suitable to it.—K.

Plant Collecting in the Tyrol.—May I suggest to "Wanderer" (see p. 391) that the much branched annual with whorls of scarlet fruit that he found, and of which he did not know the name, might possibly be the Strawberry Blite, or Strawberry Spinach, Blitum capitatum.—G. F.

Scutellaria macrantha.—"W. J." (see p. 428) is quite right in his remarks respecting this plant. It was S. cordifolia, not mociniana, which I intended to have named.—J. S.

No. 236.] SATURDAY, MAY 27, 1876. [Vol. IX.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

NEWLY IMPORTED ORCHIDS.

SCARCELY a week passes during the warmer months of the year in which consignments of Orchids are not received in this country, and as much misapprehension exists with respect to their treatment, it may be well to lay down some definite rules by means of which the destruction of many beautiful plants which cost much patience and care to collect and convey to this country, may, to some extent at least, be avoided. One of the greatest and most common mistakes with respect to the treatment of newly imported Orchids, is to lay them under the stages of the Orchid-house for a considerable time before potting them; in some cases water is freely poured over them from a rosed watering-pot, and that even while the plants have the stagnant moisture from the floor to contend with—frequently aggravated by drip from the plants on the stages above. Such treatment while Orchids are weak from travelling only tends to make matters worse, and it is not surprising that when taken up for potting only the strongest remain alive, and even these are in a worse condition than when they arrived; another kind of treatment almost as mischievous is to pot the newly imported plants immediately on receiving them, putting them in a warm house to grow. If the plants arrive in very good condition and during their proper growing season the consequences may not be so bad, but in any other case failure is sure to be the result. All newly imported Orchids are more or less emaciated, a condition brought on gradually during the journey, and any attempt to suddenly make them plump only excites the impaired cellular tissues in places and utterly destroys them in others; consequently, we often see newly imported plants so treated with parts of the pseudo-bulbs or leaves looking healthy and green, and the other parts indented, black, and decayed; such plants are unfit to produce sound, vigorous growth; imported plants having become gradually emaciated should be as gradually brought into their usual condition, in order that each cell may slowly fill out until the whole are in proper condition. Orchids forwarded to this country have had enough of ill-treatment which could not be avoided; therefore, immediately on their arrival they should be placed under comfortable circumstances, the treatment to which they are subjected being in accordance with the time of year, the condition in which they arrive, and the state in which the last-made growth happens to be. If some of the plants have not started, and others have made weakly growth on the journey, in unpacking the two should be kept separate, and afterwards managed according to their respective wants. Orchids travel best when they are gathered just as the growth is matured or within such a period afterwards as will allow of their reaching this country before their natural growing season has commenced. Plants so gathered are often received without much injury and with the young growth not started but ready to start as soon as the plants have been got into a sufficiently healthy condition.

On receiving plants of this description they should be taken out carefully one at a time, sponged all over with tepid water, and placed on Sphagnum Moss on a stage, in a cool, shady house (about 60°, or as near that as possible), repeating the sponging each morning for three or four days, when, if the plants be Cattleyas, Lælias, Odontoglossums, Oncidiums, or simiilar subjects usually grown in pots, they should be placed into the smallest possible pots, and returned to the place in the house which they occupied before they were potted. The pots for receiving the plants should be prepared with rough crocks, after which the roots should be put in, holding the plant level with the rim of the pot, filling up with finer crocks, and steadying it, if necessary, with a stick, but no Moss or peat should as yet be used. The crocks in which the plants are placed should be watered with a spouted watering pot: sparingly at first, but when the plants begin to grow water may be given freely in the same way. As soon as the young growths and roots are fairly started, the plants should be placed in a warmer house, and in a few days potted in the ordinary way, or put into baskets, which should be small in proportion to the size of the plant; freshly imported Dendrobiums, unless of too large growth, should always be put into baskets, or on blocks. The difficulty, however, experienced in obtaining many varieties of Orchids, often obliges collectors to gather them when they are making new growth, or so near the growing season that they start into weakly growth during the journey, and in such cases they are more difficult to manage. Many plants sent under such conditions will be found to have lost their leading growth, and will have to depend on the back eyes, and the young growths of others will be so weak and blanched as to require the greatest care to prevent them from rotting; it is highly important, too, that plants received under such conditions should not be allowed to get wet, and therefore they must not be sponged for fear of the moisture getting among the frail growths. They should be handled very carefully, taken out one at a time, and suspended head downwards in a shady house, the temperature of which is that previously recommended, for ten days or a fortnight without having any water given them; a moist atmosphere and a regular heat should, however, be kept up, but it must not be allowed to range high at any time, or in place of reviving the plants it will still further exhaust them. During the time they are suspended, they should be looked over daily, and their positions altered, in order to prevent them from becoming drawn, and any that may be found with their young growth beginning to turn up towards the light should at once be hung the right way up, or placed on blocks. At the expiration of the time stated, the plants will have become somewhat acclimatised, and may be placed in pots or fastened on blocks, and treated in the manner previously described; but the great object should be to prevent the water from getting into the new growth. Should the temperature of the house not be easily kept down, instead of suspending the plants, it will be better to place them on living but not wet Sphagnum Moss, on a stage in the coolest part of the house, taking the same care as before with regard to water.

A good block for Orchids, and one that does not easily decay, is made by cutting some rough cork into pieces from 4 in. to 6 in. in diameter, boring a hole in each side and attaching to it a stout copper wire; the wire should be brought up to a point in the middle and turned round, so as to form a hook by which the block may be suspended, after the manner of the ordinary basket used for Orchids. When arranged in this way the cork hangs horizontally, the concave side being up, and it retains moisture much better than blocks hung perpendicularly, besides being more suitable for the growth of the plants; the latter should be fastened to the blocks with fine copper wire, using as little of it as possible, and placing a little Sphagnum Moss here and there under the wire to prevent it from pressing on the roots. Aerides, Angræcums, Saccolabiums, Phalænopsis, and all Orchids of similar growth should be unpacked, sponged, and suspended head downwards in a moist, cool house for ten days or a fortnight, sponging them over each morning during that time, after which the large growing varieties should be fixed in pots with crocks and charcoal, and firmly fastened to a stick, but no Sphagnum should be used until the plants begin to root. Phalænopsis and smaller growing kinds should be fastened on blocks or in baskets with crocks and charcoal; the crocks should be watered from time to time with a spouted watering-pot until the plants begin to root and grow, when they should be placed in a warmer house and top-dressed with Sphagnum Moss. Newly imported Orchids should never be syringed, but attention should be paid to the maintenance of a low genial temperature and moist atmosphere by throwing water on the floor and under the stages, and the plants should be treated, after the first fortnight or three weeks, in much the same way as established plants with respect to heat, &c.; that is to say, if the growing season of the plants imported have not arrived, they must be kept cool until they grow, but if they arrive at a time when they should start into growth they should be gradually prepared for being placed in the warmer house at once. Some recommend cutting away the dead portions of the leaves and the dead roots before placing the plants in pots, but, in my opinion, it is not good practice to do so, as it admits air into the inner structure of the plants at a time when they are inactive; it is better to leave them as they are, and afterwards remove any portion of them that seemed to be dying back. It is natural for Orchids, even when established, and also in their native habitats, to lose some of their back bulbs, but they nourish the plant when left on until they are quite dry. The Odontoglossums of the Alexandræ class should never have the old bulbs cut off; one may often see plants of this class push vigorously from the rhizome beneath the dead bulbs of an apparently dead plant, and afterwards make sound plants; whereas, if the dead bulbs had been removed, the whole would have been lost. Evergreen terrestrial Orchids from warm countries should be potted immediately on their arrival, and placed in a cool house for a few days without having water given them, after which they should be put in a warm house and treated like other plants of the same kind. Deciduous terrestrial Orchids from warm countries should be potted immediately on their arrival; they should be kept in a cool house, and but sparingly watered until they begin to grow, when they should be placed in a warm house. In winter and spring Orchids are often received which have been exposed to too much cold on the journey, sometimes being even nipped with frost, and this kind of importation is perhaps the worst of all with which to deal, for tropical Orchids, either established or imported, which have been subjected to anything approaching frost, if they ever get over it, remain sickly and unsightly for years. I have seen Orchids which have been touched by frost on the journey brought round by being immersed in cold water for an hour or so when unpacked, afterwards sponging them almost dry, and placing them in a cold house on Sphagnum Moss; the immersion and drying should be repeated each day for three or four days, and the plants should be left in the cold house until they exhibit signs of renewed growth, when they may be treated as importations received in good condition. The great aim in the resuscitation of newly-imported Orchids should be to place the plants from whatever part they may come at first in such a low genial temperature and moist atmosphere as shall necessitate giving little or no water, and to keep them cool and rather dry until both top and roots begin to start into growth.

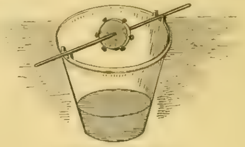
James O'Brien.

Plant Exchanges.—A pamphlet was put into my hands the other day by a botanical friend, entitled, "Rules for the London Botanical Exchange Club," that is to say, a club meant to facilitate the exchange of dried specimens of plants. My friend, however, on showing it to me, said—Why cannot something of this sort be done with living plants? And the idea seemed to me to be so good that I venture to trouble you with a few lines about it. Any one who is trying to form a collection of living plants must know how often he has more of some rare and good plant than perhaps he cares for, while another person would be glad to give in exchange for it what he would prize very highly. Indeed, exchanges among the lovers of rare and beautiful plants are not unfrequent now. My object, then, in writing this letter is to ask if any system could be introduced like that alluded to above by which exchanges could be made more easy than they now are, and those who are pursuing the same end could be brought into contact with each other. Only a small annual subscription would be required, as in the case of the London Botanical Exchange Club. The greatest difficulty would be (as in its case) in finding a secretary; but might not this office be held in turn by different members? It would not then, I think, be so very burdensome. Lists of desiderata could be made out, and there would thus be very great assistance in forming collections. At all events, if you think it worth while, I shall be glad if the idea can be ventilated in your columns. Nurserymen would have nothing to fear from it, for it never could take effect on a large scale, and it would be only amongst those who already have some rare and beautiful plants which they offer to others. I think it would, from one point of view, even tend to the purchase of rare and expensive plants. One could buy them with a view to exchanges after a little time, when they have been multiplied.—Progress. [We believe all attempts to establish a system of plant exchanges in this country have hitherto failed.]

Rheum officinale.—Any of our readers who may be interested in the history and cultivation of the Officinal Rhubarbs, will find an exhaustive article on the subject by Professor Flückiger, in the new volume of the "Repertorium für Pharmacie."

THE BEST GARDEN MOUSE-TRAP.

More than twenty years ago I managed a place where our kitchen garden was partly surrounded by Beech woods; consequently we were greatly troubled with mice, which made sad havoc with newly-sown Peas and other seeds. The accompanying is a representation of the trap which I employed for their destruction, and which was eminently successful, for we trapped them by hundreds. I instructed our potter to make me a number of glazed pots about the size of a 24-in. pot, but 2 in. or 3 in. deeper. There were four projections on the upper edge, as shown in the sketch, each pair being placed 1½ in. apart. The pots were only glazed inside. The rest of the apparatus consisted of a round stick ¾ in. in diameter, on the centre of which was fixed a turned wooden roller 3 in. in diameter and ¾ in. thick; the round stick, being 5 in. longer than the diameter of the pot, projected 2½ in. over its outside each way. Four or five baits were fastened on the edge of the roller with tin tacks; the baits consisted of either cheese or bacon rind, or garden Beans. Thus baited, the stick was laid between the projections on the rim of the pot, with the roller exactly in the centre. The pots were half-filled with water, and sunk in the soil, so that the stick, when in position, cleared the ground about one-eighth of an inch. A mouse endeavouring to get at the bait has to travel along the stick to the roller, but cannot reach the bait without rising on the roller; when it does this the roller revolves, the mouse loses its balance, and is precipitated into the water, leaving the trap ready set for others to follow. The dead mice should be taken out every morning and the roller removed to be replaced in the evening, for birds sometimes dislodge the baits during the day. A little more water must be put in the pots as required. As many as nineteen mice have been drowned in one of these pots in a single night. It is undoubtedly the best mouse-trap for a garden with which I am acquainted.—Henry A. Wood, *Willow Lodge, Mitcham.*



A Garden Mouse-trap.

Cork Tree-guards v. Hares and Rabbits.—I have hit upon a good expedient for protecting the bark of young trees from the attacks of hares and rabbits, and one which can be readily applied. The material which I use is Virgin Cork, at present so much employed in the construction of Ferneries, and which can be procured in pieces of all shapes and sizes, that can be easily placed round the stems of young trees, and attached in such a way that the attacks of hares and rabbits will be rendered ineffectual. The mischief caused to specimen trees planted near dwelling-houses, in parks, or on lawns by cats and dogs, &c., may also be prevented by the same means. I first fix the pieces in their proper position, and then fasten them together with wire or strong twine, an operation which can be done at a trifling expense; but, of course, such tree protectors might be made to close round the stems, and open and shut by means of hinges.—William Baxter Smith, *Knowefield, Carlisle.*

Dovedale Moss (see p. 467).—This plant is doubtless Saxifraga hypnoides, or one of its many varieties, as I believe no other kind grows in Derbyshire. The Mossy Saxifrages constitute a distinct group, in which there are perhaps fifty to sixty species and varieties, and many of them are eminently beautiful, varying as they do from the silvery grey of S. pinnatifida to the emerald green of S. virescens. I cannot say more as to their adaptability for covering otherwise naked surfaces, than I said in my last communication to The Garden (see p. 399). Of course they are meant to be permanent; and if the bulb bed has been properly prepared, the planting or lifting of the bulbs becomes an easy matter; besides, a few beds of these help to tone down a blaze of colour in geometrical gardens, and I really wonder that they do not enter largely into the composition of this style of decoration. There is only one answer to be made to this—they are not sufficiently known. As edgings many of them are quite equal to Box, and they will flourish in a great many situations where Box will not grow. — Thomas Williams, *Bath Lodge, Ormskirk.*

NOTES OF THE WEEK.

—— The trees in the parks and in Kensington Gardens are now in great beauty, the Hawthorns and Chestnuts being particularly fine. There is a little open lawn with a small Lime tree in its centre, quite near the Rotten Row corner of the gardens, around which there are several charming tree pictures. One Hawthorn is about 40 ft. high. Some of the central unfrequented portions of the park are among the most attractive. Nobody should despair of growing flowering trees in London after seeing Kensington Gardens in their present dress.

—— The Yube Oranges are at this moment the most delicious obtainable in the market, and remarkable for size, delicacy of flesh, and flavour. Every year sees the Orange cultivated in a greater number of localities, and as a consequence we have supplies extending over a longer period of the year than was the case some years ago. It is satisfactory to note such progress in the culture of the most valuable of all fruits.

—— The earliest Cornflower blossoms (Centaurea Cyanus) have come in from autumn-sown plants, and very useful they are. The hardy perennial blue Cornflower (C. montana), being earlier than the common one, is also sent to the flower markets, but not being quite so good in colour or form, will be little sought for now the true plant has come in. A little seed of this plant should be sown every autumn in gardens where the plant is not allowed to "sow itself," as the flowers are most precious for cutting in early summer.

—— Very fine samples of Broccoli in large quantities come from the neighbourhood of Ponder's End, Enfield. The variety is called Mitchell's Champion of England. It is the best specimen we have seen sent in quantity to the market.

—— The old Turban and other varieties of the Ranunculus, in blossom at this season, are among the few old-fashioned flowers which do not seem to be again coming into general cultivation. Few flowers are, however, more attractive or beautiful, and we hope they will be more cultivated in future.

—— Both in England and Belgium there are movements on foot promoting memorials to the memory of the late M. Louis Van Houtte. A meeting will be held at South Kensington on Friday, June 2nd, at two p.m., to consider the British memorial.

—— The Brighton Corporation have established a nursery of their own for supplying the gardens of that town with flowers and trees. As the adoption of this plan, if well carried out, cannot fail to help the cause of public gardening in towns, the example is worthy of general adoption.

—— There are now noble masses of blossom on a plant of Viburnum macrocephalum against a wall in the Alpine plant frame ground at Kew. In the same border there is a good plant in flower of the rare and curious Craspedia Richei, a plant of the Natural Order Compositæ, having rich yellow, globular heads of flower.

—— The markets are now well supplied with the delicate little Carrots grown in the Paris gardens: in fact, Covent Garden in the morning reminds us in places of the neighbourhood of the Halles in Paris, where the streets are half covered with these Carrots in the early mornings. It is much to be desired that the same or a similar system of culture would be adopted near other large cities, as it need hardly be said the conditions of success are not confined to one place.

—— The Rev. J. B. Norman, of Whitchurch Rectory, Edgware, informs us that he has now, in his collection of Orchids, Masdevallia Veitchii, bearing over fifty flowers and buds; M. ignea, with sixty flowers; several fine forms of M. Harryana, and a plant of M. trochilus, bearing several of its rich golden-brown flowers. Of Cattleya Mossiæ there are stated to be upwards of fifty plants in bloom in this select collection, one of which—a plant from the famous Manley Hall collection—is especially beautiful, the flowers being of fine form and substance, and very chastely coloured.

—— We have just received from Marshall P. Wilder, the report of the American Pomological Society for the Session of 1875, a most instructive, well-filled, and well-printed work. Comparing this with anything issued by our Horticultural Society for many years past may serve to show us to what impotent condition our own Society has fallen. The American Pomological Society is a great power, and well organised for good—a most effective collector and distributor of sound knowledge throughout that mighty land. There are various reasons to account for the success of this great Society, but one of the main ones is that it is exclusively composed of men who have their hands and hearts in the work. Here it is too often the rule to make up the governing bodies of such societies partly or wholly of men who know nothing of the work to be done, but whose social or other influence gives them predominance. Between these and the feeble busy-bodies who are usually to be found connected with societies, these bodies are frequently rendered powerless for healthy action.

—— The Rev. J. G. Nelson sends us from Aldborough Rectory a lovely series of seedling Alpine Phloxes (Alpines of the Rocky Mountains, we mean) of varied and beautiful colours. They are mostly varieties of P. subulata and P. setacea. Some are white, with purple centres, and very chaste and pretty. It is probable that these little mossy Phloxes may one day yield a race as varied and vivid in colour as the tall Phloxes of our gardens. We hope, therefore, Mr. Nelson will perpetuate the more distinct of these seedlings, and that the birth-place of Phlox Nelsoni may also prove that of other precious forms of the mountain Phloxes of America.

—— It is to be regretted that the Bird Cherry, now laden with its long bunches of sweet flowers, is not more frequently met with; also that amateurs do not take up such subjects as flowering trees and shrubs instead of allowing the jobbing gardener to plant his universal mixture of Privet, Laurel, &c. Many a small suburban garden might easily show a choice collection of flowering shrubs or low trees where the above subjects now prevail. Even a collection of Lilacs would be better than the invariable monotony that prevails.

—— To Mr. W. E. Gumbleton, of Belgrove, Queenstown; the Hon. and Rev. J. T. Boscawen, of Lamorran Probus, Cornwall; and Mr. Luscombe, of Combe Royal, Kingsbridge, Devon, we are indebted for flowering specimens of what is, perhaps, the most valuable shrub ever introduced so far as the southern counties of England and Ireland are concerned. We allude to the Fire Bush (Embothrium coccineum) introduced by Messrs. Veitch from South America, and now found to be a hardy shrub. It is wholly unique among shrubs, and produces abundantly its large bunches of long vivid scarlet flowers. We propose to figure it in due time in The Garden, as such a brilliant gain for our own gardens deserves to be widely known.

—— At a meeting of the Edinburgh Botanical Society, held on the 11th inst., an interesting communication was read from the Rev. D. Landsborough, on experiments in growing several Australian plants and trees in Arran, in the Firth of Clyde, including among others the great Australian Tree Fern and other Tree Ferns, Acacias, and Gum trees. The Blue Gum grew 11½ in. the first year, 4 ft. the second, and 6 ft. the third. The Eucalyptus pendula also grows well in sheltered situations along the west coast, and Mr. Landsborough expects to see it generally introduced in a few years, when it will form a valuable addition to our evergreen shrubs.

Box in Washington's Garden.—The Box edgings in the garden of Washington, at Mount Vernon, are still in a healthy condition, though over 100 years old. They are well kept and cared for. The estate was named Mount Vernon by Washington, out of respect to Admiral Vernon, who commanded the West India squadron of the English fleet.—"Gardeners' Monthly." [When we saw these edgings in 1870 they were nearly 4 ft. high, but none the less interesting on that account, and we remember admiring the vigorous growth of the Box and its strong and agreeable odour. Washington's garden is a very interesting one, and we hope that its trees and shrubs may be long preserved.]

Names.—It is a pity that three such important products as Coca, the Cocoa of the breakfast-table, and the Cocoa-nut, though completely distinct both botanically and in their properties and uses, should have names so provokingly similar that most people, we believe, are puzzled to say which is which. The Erythroxylon Coca (says "Chambers's Journal") has no connection with the Cocoa tree (Theobroma Cacao), which yields the well-known beverage cocoa or chocolate. Equally distinct from both is the Cocoa-nut Palm (Cocos nucifera), the fruit of which supplies the inhabitants of many tropical coasts and islands with a great part of their food, and also furnishes the Cocoa-nut oil of commerce. It is the more solid ingredient of this oil, known as Cocoa-nut butter, that is so much used as an unguent, when mixed with a little Olive-oil, to give it softness. Among many changes of nomenclature constantly going on, could nothing be done to remedy the perplexity caused by so many diverse articles being known by names so closely resembling each other?

Rookeries in Wrong Places.—I have a liking for rookeries, and every good feeling towards their inhabitants, but I must confess with sorrow that I am greatly inconvenienced by the rooks continually taking possession of new trees in the most incommoded places, such as a much frequented walk, or a bridge over which they build their nests upon the boughs of trees which overhang, which are generally so high that no one can reach them to pull down the nests, and it would be a ruinous cure to cut the limbs off the trees. Perhaps some correspondent may know some means to send rooks from trees where they are not wanted.—O.

TREES AND SHRUBS.

THE MAJOR OAK AT THORESBY PARK.

The annexed illustration, prepared from a photograph, represents a grand type of forest Oak growing at Thoresby Park, Notts. This fine old tree measures, at 2 ft. above the base, 30 ft. in circumference, the smallest girth of the bole being 27 ft. 9 in.; immense buttress roots crop up 2 ft. above the ground and extend outwards for several yards. Although the hollow in the trunk is 6 ft. 6 in. in diameter and about 15 ft. in height, and capable of holding ten or twelve persons, this tree produces a massive head of vigorous foliage every season; the spread of its branches is about 27 yards in diameter, and some of its limbs girth from 8 ft. to 12 ft. The age of this tree is uncertain, but it may, I think, safely be set down at not less than 1000 or 1200 years, and, judging from its vigour at present, it may yet live for several centuries. There are many Oak trees in this country with larger trunks than that of the Major, but I question whether there is another tree with such a noble, well-balanced, massive head, and with such wide-spreading and huge limbs. Thoresby, forming, as it does, part of "Merrie Sherwood," can probably boast of possessing more old Oak trees than any other domain in England; they abound in countless numbers intermixed with wild Birches of varied and beautiful forms, and are, for the most part, short, rough, and burly; many of their trunks are swollen and distorted into all kinds of grotesque shapes, and, notwithstanding that the majority of them are more or less in an advanced state of decay, the immense quantity of young shoots produced by them is surprising; the interior roots are in every case gone—probably many centuries ago—still their trunks, where sufficient vitality is left, are expanding, although decay is going on inwardly. Mr. Jamieson, the wood manager at Thoresby, directed my attention to what he calls his favourite Oak, named "Simon Foster;" it is certainly a remarkable tree, and one which, on account of the rich colouring of the trunk, is quite a study for an artist. I measured its bole, and found it to girth at 2 ft. up, 31 ft. 6 in., and at 6 ft. up, 23 ft. Timber trees of nearly all kinds attain large girths at Thoresby. A Beech, probably the largest in England, at 5 ft. up measured 17 ft. 6 in.; a Birch at 5 ft., 16 ft.; a Larch at 5 ft., 11 ft.; and I also observed many fine specimens of old Scotch Firs.

George Berry.

Longleat.

A Plea for Trees in London.—"Referring to the paragraph under the heading, 'Flower Gardens in Churchyards,' in the 'Times' a few days ago, I shall be glad if you will allow me to say a word for trees to those who may have to take advantage of the decision mentioned therein. In dealing with open spaces in cities, the first aim should be to make them tree-gardens, and afterwards make what provision the skill or means at the disposal of the governing body may allow as regards floral decoration. A variety of beautiful deciduous trees will thrive in London if carefully planted, and not the least of their good qualities is their taking care of themselves, so that subsequent neglect has little or no harmful effect on them. A very little money spent on well-chosen deciduous Trees gives a noble result in due time, whereas many thousands of pounds are annually spent in London and its suburbs on subjects that are only planted to die, or at most only survive a few years."—"Times."

Embothrium coccineum.—At the last meeting of the Royal Horticultural Society the Rev. M. J. Berkeley exhibited a specimen of this charming plant in flower. It is said to be as hardy as Berberis Darwinii, and, if it be so, no good garden should be without it. If I remember rightly, however, some bunches of Embothrium were sent to the Horticultural Society's Gardens, South Kensington, a few years ago, for exhibition, from a gentleman's garden in South Devon, and I was under the impression that they had been matted up in winter with great care; therefore, what I want to know is whether the plant is really hardy or not.—F. R. S. [The Hon. and Rev. J. T. Boscawen, writing to us from Lamorran Probus, says—I have a good plant of Embothrium, which has been out-of-doors for some years, and it has never been injured by frost, although in an exposed situation—lowest temperature, 16° this year. At Combe Royal, Kingsbridge, South Devon, the Embothrium bloom is said to have been sadly injured by the spring frosts. Last year the two principal specimens of Embothrium there were literally a mass of glowing red from top to bottom.]

The Eucalyptus in Algeria.—Its culture in Algeria was commenced on a large scale in 1867. The first plantings have already produced wood that can be utilized in carpentry and wheelwrighting. Planks over 40 ft. long have been cut, showing that after eight years of growth this tree will produce timber of great value and utility. The hygienic qualities of this tree, claimed by writers in other countries, do not appear to have been realized in Algeria. The plantations have had a remarkably thrifty growth, yet no diminution in the cases of malarial fever are noted. The wood is said to be harder than that of any other tree growing in that region, and its production promises much profit.

Cercis canadensis.—I saw a fine old tree of this in flower at the vicarage, St. Glavias, the other day. It is fully 20 ft. in height, and as much, I should think, through, and covered with pink, pea-shaped flowers, which are used by the French Canadians in salads. Patches of bloom appear on the old bare branches 3 or 4 in. across, and look as if they were tacked on; part of the tree has to be propped up. This tree—for it is more than a deciduous shrub—is worthy of being planted by carriage drives and in pleasure grounds much more generally than it is, both on account of its flowers, which come in at a season when outdoor blossoms are most appreciated, and also on account of its leaves, which assume a scarlet hue in autumn. —Henry Mills, *Enys, Penryn, Cornwall.*

Evergreens for Damp Situations.—Some two years ago I had some long oblong beds made adjoining a piece of water in our ornamental grounds. These I filled with Ivy; this, however, has turned out a failure, and as the ground lies low, and is close to the water, I presume the situation is too damp for it. I may add, that on digging down we found water within 18 in. of the surface. As I am anxious to clothe these beds with, if possible, an evergreen that will stand the damp situation and yet look ornamental, I shall be much obliged if any of your correspondents could recommend me some subject suitable for the purpose. I am also desirous of covering some ground under trees. We have planted Laurels, but I find that they do not thrive under such circumstances.—A Subscriber.

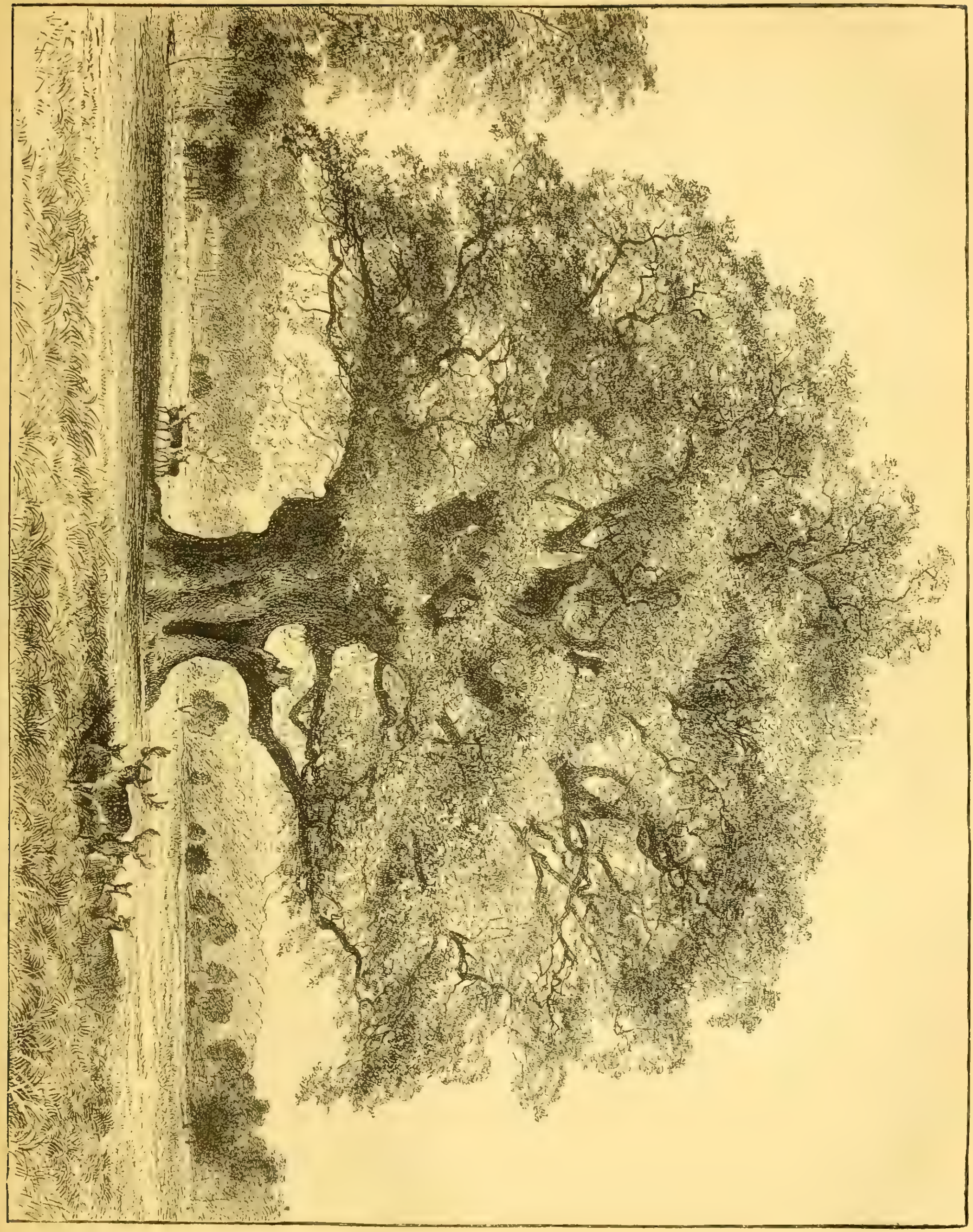
Covering for Tree Wounds.—It often happens that, either by intention as in pruning, or by accident, trees are wounded in various ways. A common practice is to cover large wounds with coal-tar, but this is objected to by some as injurious to the tree. Experiments made in the orchards and gardens of the Pomological Institute, at Ruthlengen, in Germany, go to show, however, that its use in covering large wounds is not injurious; but that, on the contrary, a callus readily forms under the tar, on the edges of the wound, and that the wounded part is thus protected from decay. There is, nevertheless, another objection; for if the tar be applied a little too thick, the sun melts it and it runs down on the bark of the tree. This can be obviated by mixing and stirring, and thus incorporating with the tar about three or four times its weight of powdered slate, known as slate flour—the mixture being known as plastic slate, and used for roofing purposes. It is easily applied with an old knife or flat stick, and though it hardens on the surface, it remains soft and elastic underneath. The heat of the sun does not melt it, the coldest winter weather does not cause it to crack, neither does it peel off. The same mixture is also useful for other purposes in the garden. Leaky watering-pots, barrels, pails, shutters, sashes, &c., can be easily repaired with it, and much annoyance and loss of time be thus avoided. It will stick to any surface provided it be not oily, and as it does not harden when kept in a mass, it is always ready for use. A gallon will last for a long time.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Araucaria imbricata in the North of Ireland.—We have been informed that perhaps the finest specimen of the Chili Pine to be found in Ireland is growing at Ballymacool, the beautiful residence of Mr. J. R. Boyd, near Letterkenny, Co. Donegal. It is over 40 ft. high, faultlessly symmetrical, feathered to the ground, and not a brown leaf on it.—"Irish Farmers' Gazette." [We had supposed the Woodstock tree to be the finest in Ireland: it would, perhaps, be as well if the exact size of this Donegal specimen were given.]

Longfellow's Chestnut Tree.—We read in a Boston paper that another venerable tree has been cut down and carried away. It stood in Brattle Street, Cambridge, U.S., and was the identical "spreading Chestnut-tree" under which the "village smithy" stood. "The smith—a mighty man was he," but the Boston people do not seem to know what became of him. Among other souvenirs, a chair is to be made of the old tree, as a present to Longfellow, who immortalized it.

Shade Trees.—27,700 shade trees are now growing in the streets of Washington, 19,000 of which have been planted within the last three years. Although this is by no means a very large city, a variety of kinds is planted.



The "Major Oak" at Thoresby Park, Nottinghamshire.

THE FRUIT GARDEN.

MELON CULTURE.*

IN order to cultivate Melons successfully a structure of some kind must be employed, and as an ordinary garden frame is most generally used for the purpose, I shall devote the principal part of this paper to Melon-growing in frames. The best Melon frame is one with two lights, and its dimensions should be about 9 ft. long, 6 ft. wide, 2 ft. 6 in. in height at the back, and 15 in. in front. The bed on which the frame is to be placed should consist of manure and leaves that have been previously well stirred and sweetened so that no rank steam may arise after the bed is made; its depth should be in proportion to the season at which it is put up—for example, if in March, which I consider sufficiently early, it should be quite 5 ft. high at the back and 3 ft. 6 in. in front; but if in May, with a view to having Melons ripe in August, a much less amount of material would be sufficient, and in either case the bed in the first instance need not be more than 1 ft. wider than the frame all round. When the bed is made up examine it daily for a time by means of a trial-stick, and when its heat has fallen to 100° or 120° the soil may safely be put in. I generally make what is termed a heap or hillock in the centre of each light, and in a day or two, when the soil has become warmed through to the top of the hillock, I set the plants. It has just occurred to me that perhaps I ought to have said something about raising the plants before planting them, but as the majority of cultivators begin growing Cucumbers much earlier than Melons, the Cucumber frame would naturally suggest itself as the proper nursery for Melon plants, instead of putting up a frame specially for that purpose. Many prefer what is termed a good, friable, turfy loam for Melons. I have tried many sorts of loam for them, but I have always found that the stiffer or more retentive the soil, provided it was not absolute clay, the greater perfection the Melons attained, and the fruit was better set and better flavoured than if grown on lighter soils. Plants which have been previously prepared (three in a small 48-sized pot) may now be planted (but not too deeply) on the top of the hillock, taking care that the collar of the plant does not sink below the level of the other soil, an error which gives rise to one of the principal causes of failure in Melon-growing, viz., shanking, an evil created by the water remaining about the collars of the plants. Great attention will now have to be paid to giving air on all favourable occasions, especially in the earlier months of the year, always avoiding cold draughts. I sometimes hang a piece of tiffany along the back of the frame to sift, as it were, the air, and in the early months of the year this little device should not be neglected. Watering, also, must not be carelessly done during early cultivation; but in the summer they will require liberal supplies, and if the soil be not naturally rich, a little liquid manure occasionally administered will greatly benefit them. Fresh soil should be added as often as the roots show themselves round the sides of the hillocks until the frame is full, and at all periods of earthing make the soil tolerably firm, but especially at the final earthing all over the surface. I would mention with regard to adding fresh soil (and this remark should receive attention, especially in the earlier months of the year), that it should be placed in a warm situation some days previous to being used, if possible in a Vinery or Peach-house at work. A moist condition of the soil is necessary to ensure a free growth, light, air, and a proper temperature, making that growth short or long jointed, fruitful or barren, in proportion as they are judiciously or carelessly given when the plants are in bloom; the surface of the soil, or at any rate the atmosphere of the frame, should be drier at the time of setting than at other times.

I consider artificial fertilisation very essential at all seasons for ensuring a crop of Melons. I do not mean that if the female blossoms be not artificially fertilised you will not have a crop of fruit, but that if you fertilise the blooms you will have them swell off more uniformly—a consideration of some importance, for I have in some instances observed that if one or two fruits take the lead, there has been a difficulty in getting a satisfactory number to swell off. It is a good practice to give a good watering a few days before the flowers begin to open, to have the bottom-heat brisk, and to admit as much fresh air as the state of the weather will permit. About mid-day examine the plants, by which time the pollen will be dry, and fertilise any blooms fit for the operation. When the fruit has set and begun to swell, water will be needed once or twice a week, if the linings of the bed be in good condition and the heat brisk; but in this, circumstances alter cases, and no cut-and-dried rules can be laid down; however, one thing should be borne in mind, that if possible the centre stem of the plant, whence the branches radiate, should be moistened, or evil results will soon set in. As to stopping and training, it is presumed that the plants were stopped previous to planting out; and, supposing them to be stopped at the second rough leaf, they will each push three or four shoots, and these do not travel far before they push laterals, which, if left, only crowd the centre of the plant to no benefit, for these early laterals seldom produce female blooms, and if they did it would not be desirable to retain them, as the plants would not yet be sufficiently established to swell off fruit to perfection. After selecting, say six or eight of the strongest shoots, I train them by pegging them down, one exactly towards each corner of the frame, one front and back, and one to each side; this will be found ample. I do not stop any more until the respective shoots have reached within a foot of the corners, fronts, back, or sides of the frame, and I have taken off all the laterals up to about five or six, which I leave at the point of each shoot after stopping; it will be found that the laterals now produced are very much stronger than any that have previously showed. These will be sure to produce fruit blossoms, and due attention to setting and after-management will bring the crop to perfection. The number of fruit to be left on each plant must be determined by the sort. Some, like Scarlet Gem, will permit of ten or a dozen to a light; while of the larger kinds four or six would be considered a good crop. When the fruit approaches maturity, the greater part of the spray-like laterals should be thinned out, at no time should they be allowed to crowd the frame or shade the fruit. It is a good plan to elevate the fruit a little above the foliage, as it keeps drier, and exposes it to the full action of the sun, no fruit being improved more in flavour by sunshine than the Melon.

I will very briefly now allude to Melons in houses. The sort of house, advocated by Mr. Bridger at our last meeting as being suited to the cultivation of Cucumbers, is just what would suit Melons, especially his water-tank for supplying the bottom-heat. I am a strong advocate for tanks as furnishers of bottom-heat for Pines, Cucumbers, and Melons, and, in fact, for every plant that requires bottom-heat, or for propagating purposes. The soil and general treatment would be the same as for Melons in frames. I train a limited number of shoots up the roof-trellis, and do not stop them finally until they have made considerable growth. Melons require more liberal syringing in a house than in a frame, to keep down the red spider; and should they need fumigating at any time, either in houses or frames, by all means use Tobacco for the purpose, in preference to Tobacco-paper, rag, or any other material, for I have seen many crops of Melons destroyed or made unsightly by fumigating with Tobacco-paper, while I do not remember a single instance of their being injured by Tobacco, however strong. It is hardly necessary to enumerate the varieties, as nearly every gardener has his own pet sort; but among the best for frames are Beechwood (if obtained true) and the old Bromham Hall, Golden Queen, Golden Perfection, Egyptian, Green-flesh, Read's Scarlet-flesh, and Scarlet Gem are also all excellent kinds. For a house—Trentham Hybrid is first-rate, as are also Hybrid Cashmere, Striped Housanee, Persian Hybrid, and Dampsha.

As regards late Melons, little has been done; nevertheless, a moderately well-flavoured Melon at Christmas would be a desirable acquisition. I feel that late Melons can only be secured in one way, and that is, to have a variety that will keep a considerable time after being cut from the plant. Some years ago, the late Mr. Edlington said that some argue that a Melon is comparatively flavourless, except in summer or early autumn; in contradiction of such an opinion I can affirm that the fruits furnished by me in November and December are of good flavour; now I should like to know what were the sorts he was cultivating at that time, as the subject is worth attention. I recollect some few years back that Mr. Beech, gardener to the Marquis of Northampton, had a variety of Dampsha, which he told me he could keep for two months after it was cut. I thought I would mention this (to me) rather interesting fact, as I think that the man who can introduce a really good, keeping Melon would be entitled to as much credit as those who introduced Lady Downes and other late-keeping Grapes.

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* Read by Mr. Easton, at one of the Wimbledon Gardeners' Improvement Society's Meetings.

FOOD FOR TREES IN ORCHARDS.

The proper management of fruit trees depends greatly on the supply of food to the roots; and to understand the best mode of applying this food, it is necessary to know the extent, depth, and character of the roots; otherwise it is like attempting to feed an animal in the dark; the food may be all placed where it is inaccessible. Having given special attention to this subject for more than twenty years, and frequently presented its importance to the public, the writer naturally feels much interest in having it well understood by fruit culturists generally. The extent to which trees throw out their roots in all directions is becoming better understood. It was formerly scarcely appreciated. The rule, that the roots will be found as far from the base of the trunk as the entire height of the tree, after many examinations has invariably been found within bounds. In many cases they extend to a much greater distance. Even young dwarf Pears, the Quince roots of which are commonly supposed to be quite short and confined in a dense mass of fibres near the base of the tree, I have easily traced to a distance from the tree equal to its height. Prof. Beal, of the Michigan Agricultural College, showed me last year an orchard on the college grounds, which had been fourteen years planted, the trees being from 12 to 14 ft. high. The roots were found an examination to be thickly matted beneath the whole surface, or had extended so as to meet and cross each other, and were traced within 6 ft. of the next rows, which were 33 ft. apart. In other words, these trees, not over 14 ft. high, had thrown out roots to a distance of 27 ft. The soil was a medium loam, and there is no reason to believe that this extent of roots was an exceptional case. There is no question that the roots of Apple trees generally extend to a distance greater than the height. A part of the orchard just referred to, had been ploughed over the whole surface, after it had remained many years in Grass. The result was a great increase in the vigour of the trees. Another portion was ploughed with the exception of Grass circles 10 ft. in diameter, left at the base of the trunks. There was no apparent difference in the vigour of the trees where the whole surface was ploughed, and where the 10 ft. circles were left in Grass. This result is easily explained. The roots extending 27 ft. on each side formed a circle of fibres for each tree 54 ft. in diameter, and this circle had an area more than twenty-four times as great as that of the 10 ft. circle of Grass. The reason is therefore obvious why no apparent difference was observed in the thriftiness of the trees where all the surface was cultivated, and when the circles of Grass remained around them. Another portion of this orchard was left entirely in Grass; and still another had 10-ft. circles cultivated around the base of the trunks. There was no perceptible difference in the appearance of the trees, the foliage in both cases being alike yellowish and unthrifty in appearance, and the shoots of feeble growth. The cultivated circles, 10 ft. in diameter, constituted but a twenty-fifth part of the area covered by the whole roots, as already explained.

From these experiments it is obvious that but little advantage can result from the common practice of forming circles about fruit trees which stand in Grass—unless the circles are very large, and for the first year or two after transplanting, while the roots are comparatively short. I tried an experiment to determine the distance at which Peach trees receive nourishment through their roots. A row of trees was set a few feet distant from each other, and when they were 9 or 10 ft. high, the whole ground was permitted to become covered with a dense growth of Grass. The annual shoots were not over 8 in. in length. At one end of the row the surface was covered with a quantity of manure. The tree standing nearest to it (about 2 ft. distant) sent out shoots 4 ft. long. The second tree, 7 ft. off had shoots 2½ ft. long. On the third tree, 15 ft. distant, the shoots, were 14 in. long; and on the fourth, 23 ft. off, and too far for the roots to reach the manure, the shoots were only 8 in. long. The striking fact was here presented, that the tree 15 ft. from the manure, although but 10 ft. high, received nourishment enough through a few roots on one side to double the growth. The circle of roots, therefore, belonging to this 10-ft. tree, must have been at least 30 ft. in diameter. These, as well as many other experiments which might be cited, prove the error of the common practice of applying manure to the roots in a circumscribed circle. Broadcast culture and broadcast manuring should be given to the whole surface of the orchard, unless to save labour small portions of Grass be left at the foot of the trunk in horse cultivation.

There are other questions in the management of orchards which must be answered variously, according to the circumstances of the case. One of the questions refers to the depth to which cultivation should be given. Where the sub-soil is hard and poor, and nearly all the fertility of the land lies within a few inches of the top, the treatment must be very different from that employed on a deep, rich soil. On such a shallow soil, the trees are much more susceptible of the influence of surface culture or top-dressing with manure. The roots extending very near the surface, it becomes more important to cultivate shallow. It often happens that a top-dressing of manure on such land is the very best thing for the trees; and to allow a dense growth of Grass without manure, may be the worst treatment for their growth and success. I have just examined the roots of large trees in an Apple orchard standing on land with a comparatively loose and fertile sub-soil. The majority of the roots were 2 ft. below the surface; some of them nearly an inch in diameter were found 4 ft. below, and they appeared to run much deeper, probably 7 or 8 ft. In this orchard, after the trees were twenty years old, the ploughing of one part and the Grass in another made but little difference in the growth. The roots were far below the reach of the plough, and the roots of the Grass on the surface drew but little nourishment from 2 ft. below. Cultivating the surface, and top-dressing with manure, had comparatively little effect on the trees when old, although making a great and obvious difference while they were young and the roots nearer the surface. There are many soils, however, where most of the roots are not a foot below the surface, particularly while the trees are young. For these, two modes of treatment are adopted by cultivators. One is to keep the top mellow and clear of Grass and weeds by ploughing and harrowing. The other is to allow the ground to become covered with Grass. Much discussion has arisen on the comparative merits of the two modes. An examination of the condition of the growing tree will point out the course to pursue. If, as often happens on the rich soils of the south and west, the trees have too much rankness and succulence, rendering them liable to injury from changes of the weather, it would obviously be important to seed the land to Grass, and thus check the growth. If the trees be feeble, indicated by short and stunted annual shoots, additional vigour must be imparted by cultivation or manuring, or both. The character of the soil and climate will vary the management in different localities and regions, and no rule can be laid down for constant and invariable adoption. Yet, throughout the Northern and Eastern States, and in many portions of the Middle States, very few orchards will possess sufficient vigour unless cultivation or top-dressing be given to the soil. As a general rule for guidance in determining what treatment to adopt, the annual shoots may be examined; and if in young orchards they are less than 2 ft. in length, or in bearing orchards much less than 1 ft. in length, they should receive additional stimulus by means of manure or cultivation.

The question often occurs and is frequently discussed—Which is the best—to manure a Grass surface, or to give clean cultivation without manure? On very shallow soils, manure may be the most effective. But even then, a shallow and thorough cultivation may answer all the desired purpose. The addition of a moderate top-dressing to such a cultivated soil, will accomplish more than heavy manuring on Grass. The question will resolve itself into one of economy. Ploughing once and harrowing five times subsequently will not usually cost more than £1 per acre altogether. An equal effect produced by manure would require at least fifteen two-horse loads. At 4s. per load, and half as much more for drawing and spreading, these would amount to more than four times as much as keeping the ground clean by cultivation. In many instances the cost of manuring would be much greater; in a few possibly less. In some cases where cultivation is difficult, manuring may be used with advantage; and where valuable crops of a hundred pounds' worth of fruit per acre are obtained, as for example with the best Pears, the annual cost of £4 or £5 for manure would be a small portion of the net profit. On soils of moderate fertility, the practice of allowing Grass to grow with young or newly-set fruit trees, is one of the most common causes of failure. All plants when crowded are checked in vigour. Weeds and Grass lessen all garden crops. Indian Corn thickly sown will not bear ears. For the same reason where trees and Grass occupy the same ground, the evils of a crowded growth occur, and the trees cannot flourish so well as where they have the sole occupancy. The exception (partially) is where the roots of the trees, as they become old, run far below the Grass in the deep, rich, and porous sub-soil. I have usually found the shoots of young

Peach trees which stood in mellow, clean soil, or with well cultivated hoed crops, as Corn, Potatoes, or Beans, to grow 2½ ft. to 3 ft. in a single year. When allowed to stand in Grass, I have never seen the shoots a foot long while the trees were young, unless within reach of manure or cultivated ground through their long roots.

Quackery has been defined as the application of the same remedy to all diseases. It should never be adopted in the cultivation of fruit, but the treatment should vary with the condition of the soil and locality. The planter who succeeds well with his trees in Grass, in land of great fertility, or with high manuring, should not prescribe Grass for orchards in all other soils and places. The man who has a shallow soil, and who has injured his orchard by severely mutilating the roots with the plough, because they are all near the surface, should not object to the thorough ploughing of deep soils. I have seen an orchard which was ploughed early in the spring, after lying long in Grass, and the roots so severely cut that at least one cartload per acre was picked up and drawn off after the operation. Yet, as this was done in spring before growing had begun, and as there were plenty of roots remaining deeper in the soil, a positive benefit was derived from the ploughing, the cultivation overbalancing any injury by the mutilation of the roots, and greatly increasing the quantity as well as improving the quality of the crop. But if this deep and thorough ploughing had been performed after the trees were in leaf, or if the soil had been so shallow as to throw most of the roots within 6 in. of the surface, the result would doubtless have been disastrous.—JOHN J. THOMAS, in "Proceedings of American Pomological Society."

Gumming in Peach Trees.—I should be glad if any of your subscribers who happen to live within a mile or two of the sea-coast, would state their experience with regard to outdoor Peaches. This place is about two miles from the coast, and I find that outdoor Peaches gum badly, a circumstance that cannot, I think, be attributable to an unsuitable compost, as we are generally taught to suppose, for they are grown in a loamy soil, inclined to be a little strong, and resting on a dry, shady sub-soil; wherever, too, there is a spring in the neighbourhood the water is found to be quite soft and free from lime; in fact, the soil is just what my experience has taught me to desire for the Peach. At a neighbouring place the Peach trees are suffering from the same disease, at least the symptoms are alike; but Peaches that are protected by glass are perfectly healthy, and they are in the same kind of soil as those out-of-doors. My impression is that bad gumming in my case is due to atmospheric influence.—A SUBSCRIBER, *Membland, Ivybridge, South Devon.*

Grapes Over-thinned.—Over-thinning bunches of Grapes is said (see p. 484) to spoil their appearance when placed upon the table—they fall, it is stated, all over the place, instead of lying compact and firmly as they ought to do. I have heard this objection to over-thinning made times without number, but I would ask —Is it a valid one? Is it true that a bunch of Grapes, firm and rigid (I have seen bunches that could be held straight out by the hand when taken by the foot-stalk), looks best on the table, or that it dishes up most artistically? I do not put this question to cultivators only, but also to the artist readers of THE GARDEN. Culturally speaking, the firm bunch is the most creditable, for in most varieties a sturdy bunch is generally associated with high health and vigour; but on the dessert plate, it has, in my opinion, a very ungainly appearance. I defy anyone to make anything else than a "heap" of three or four stiffly packed bunches on the table; whereas, a limp bunch, that will "fall all over the place," is accommodating, and is just the kind of bunch which an artist, in the true sense of the word, would prefer to deal with. A painter would have nothing to do with stiff, dumpy bunches; and I apprehend the rule by which he is guided holds good in setting up fruit for dessert. I confess that I have, indeed more than once, cut off limbs and shoulders and otherwise "abused" a good bunch to make it fit well into a basket of fruit.—C.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

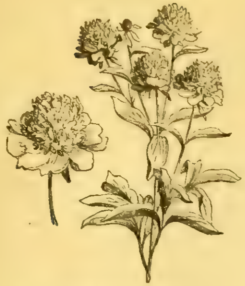
Vroege Van den Laenen.—The above is the name of a Grape which is extensively grown against gable ends in Belgium, and which is said to ripen early in the autumn even there. I fancy it would prove a valuable kind for the United Kingdom, and shall be glad to hear if any of your readers know of it or have tried it.—V.

A Disagreeable "Protector."—A French Vine-grower, near Bordeaux, to protect his crops from the frost, recently placed four large heaps of wood and dried leaves, saturated with oil, in a four-acre lot, and set fire to them. They produced a thick, black smoke, which hung over the ground like a mist, and the temperature became two or three degrees higher than in adjoining fields. The cost was estimated at 4d. an hour for each acre.

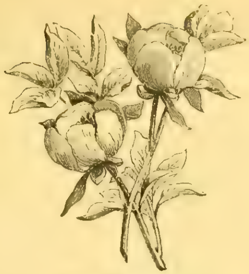
THE FLOWER GARDEN.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

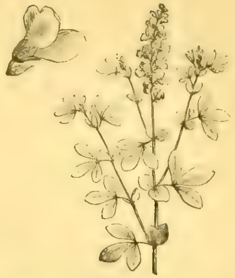
THE first time of blossoming of a plant is not always the most attractive one, and, therefore, we desire again to refer to plants mentioned as in flower one or more weeks ago to speak of their fuller beauty now. The Snowdrop Anemone, for example (A. sylvestris), which has long shown its buds, was, during the past week, in full beauty; grown in some quantity in a wood, or copse, or shrubbery, it is one of the loveliest plants we have, and being quite hardy and free, it is easily naturalised. The blue prostrate Lithospermum puts forth feeble flowers now and then throughout the winter and spring, but now it is a carpet of little cups that rival the Gentians in brilliancy, A few tufts of the smaller Hooped Petticoat Narcissus intermixed with this would produce a rich effect. A plant of the snowy-flowered Arenaria montana straying through a tuft of Lithospermum forms a pretty mixture. A handsome Lupine well worth growing is Lupinus Nootkatensis, a very hardy kind, which has already formed seed-pods, though it, like all hardy plants, has suffered from the prolonged cold winds more than they have for many years at this season. This Lupine, though uncommon in London gardens, is, according to Mr. A. Perry, quite common in the Burnley Valley in Lancashire. It sometimes happens that plants rare or quite lost about London are found plentifully in some country district where they have escaped the great destruction caused in the great incursions of the scarlet horde. The loveliest effects of the season are afforded by the various Pansies and large hybrid Violets now in flower. The continued dry cold seems to have injured them but little, and their purity and effectiveness of colouring are marvellous. It is interesting to notice the new and distinct forms that are added to these from time to time, as, for example, the white-edged kinds and the deep rich bronzy-hued ones. The effect of good plants of Trillium grandiflorum in shady places—the large pure white flowers on the ample rich green foliage—is very beautiful. The Globe-flowers (Trollius) have also been magnificent throughout the week; we have nothing more precious. Like the Daffodils, they seem not to be affected by the hard weather, and the rich globes of clear yellow of the English Globe-flower and its varieties, and the bright orange of T. napellifolius, are surpassed in beauty by no hardy flowers of our now rich garden flora; they will grow anywhere, and are seen to perfection in fully exposed places. They will prove splendid subjects for naturalisation in copses, shrubberies, woods, and, in fact, in almost any position where really effective flowers that require no care are desired. The following is our list of plants noted as in bloom early in the week:—Cypripedium montanum, C. pubescens, Anemone narcissiflora, Cyclobothra pulchella, Ranunculus uniflorus, Androsace carnea, Ranunculus Gouani, Saxifraga aquatica, S. lancostana and many others, Sedum ternatum, Erodium Manescavi, Geranium sanguineum, Anemone palmata, Alyssum atlanticum, Silene maritima in variety, Mertensia paniculata, Tulipa altaica (the most vigorous and stately of Tulips, a yellow kind: Ware's Nursery, Tottenham), T. Celsiana, Scilla algeriensis, Lychnis viscaria, Asphodelus ramosus, Campanula speciosa, Lupinus Nootkatensis, Aquilegia Wittmanniana, A. formosa, Gentiana verna, Lychnis dioica fl.-pl., Cerastium in var., Saxifraga Cymbalaria, Euphorbia Chamæcyparissias, Pæonia tenuifolia var. Smouti, Hyacinthus amethystinus albus, Symphytum bohemicum, Saxifraga Cotyledon, Trientalis europæa, Armeria Cephalotes, Thlaspi latifolia, Erodium macrodenium, Potentilla alpestris, Lupinus polyphyllus, Thermopsis fabacea, Centaurea uniflora, Sempervivum anomalum, Valeriana pyrenaica, Smilacina stellata, Iris sibirica, I. iberica, Comfrey, Geranium maculatum, Pæonia Russi, Potentilla dubia, Heracleum Leichtlini, Onosma tauricum, Hutchinsia alpina, Dryas octopetala, Sempervivum Boutigianum and a few others, Rheum officinale, Arum orientale, Clintonia borealis, Craspedia Richei, Pentstemon nitidus, Scorzonera inæqua scapa, Lasthenia glabrata, Erigeron bellidifolium, Aster salsuginosus, Centaurea Cyanus, Allium neapolitanum. A. triquetrum, Platystemon californicum, Alyssum spinosum, Pæonia officinale in var., P. anomala, P. decora, P.



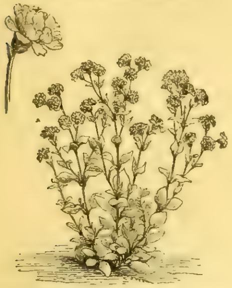
Pæonia edulis flore-pleno.



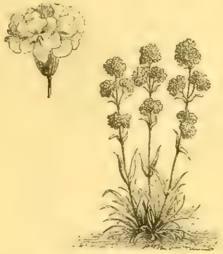
Pæonia Wittmanniana.



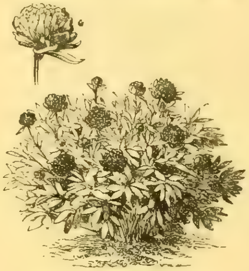
Bean-like Thermopsis (T. fabacea).



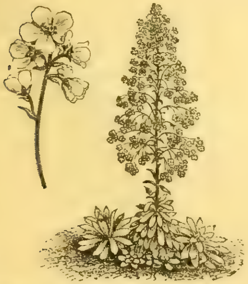
Double White Lychnis (Lychnis dioica fl.-pl.)



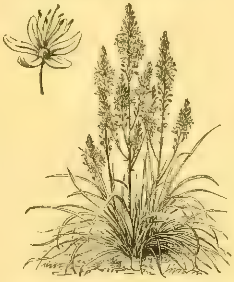
Double dwarf Lychnis
(Lychnis viscaria, var. flore-pleno).



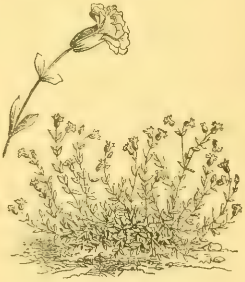
(Pæonia officinalis fl.-pl.).



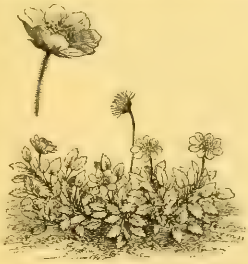
Great Alpine Saxifrage (Saxifraga Cotyledon).



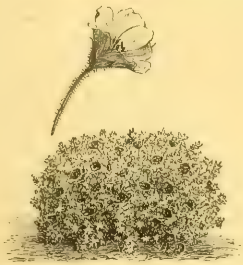
Great Asphodel (Asphodelus ramosus).



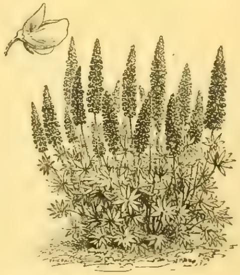
Sea Catchfly (Silene maritima).



Mountain Avens (Dryas octopetala).



Blood-red Geranium (G. sanguineum).



Common Lupine (Lupinus polyphyllus).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

mollis, P. daurica and various others, Papaver orientale, Arum crinitum, Viola cornuta, Antennaria candida, Cyclobothra lutea, Iberis gibraltarica, Erinus alpinus, Tellima grandiflora, Geranium Robertianum album, Sarracenia purpurea, Ixias in variety, and various kinds of Sparaxis.

HANDSOME IRISES.

AMONG hardy perennial plants there are certain kinds which, on account of their showy character in general, or of their striking forms and habits, rank among the aristocracy of flowers, rendering them well worthy of very special and general culture. Among such are, for instance, the Phlox, the Peony, the Larkspur, and most decidedly the many most strikingly-interesting varieties of Iris, which, to be more appreciated, only require to be more generally known. Their sword-like leaves, and large beautifully-formed flowers, produced in great profusion, embracing such a variety of colour and rich pencillings, give them very much the same position among hardy perennials that Orchids occupy among indoor tender plants. Besides, they are of the easiest culture, thriving in almost any soil, and equally at home in comparatively swampy grounds by the lake or pond side, and in the ordinary mixed border. Small portions of their fleshy prostrate rhizomes, if once planted and left to take care of themselves in a great measure, soon increase into large stools, yielding hundreds of interesting blossoms. They are, moreover, so perfectly hardy, that the severest weather of this country does not injure them. Naturally, they do best in a rather heavy moist soil, but they also succeed in any soil well worked and manured when planted.

There is now an almost endless variety of Irises, and for the information of these persons who may desire to form a select collection of them, the following list may be found useful :—amabilis, pale blue, lower petals velvety-purple, reticulated with white—very abundant bloomer; Antiope, metallic blue, lower petals violet, pencilled with pale straw; Arlequin Maliarias, white, feathered and edged with violet, lower petals purple, reticulated with white; Arnols, violet, suffused with bronze, lower petals rich velvety-purple, reticulated with orange and white; Augustus, azure-blue, lower petals pure violet, reticulated with white; aurea, chrome yellow, lower petals paler yellow, reticulated with sulphur; Bocage, pale lavender, lower petals purple, feathered with white; Bridesmaid, white, suffused with lavender, lower petals pencilled with reddish lilac; Chameleon, indigo blue, flaked with purple, lower petals pale violet, reticulated with white; Comte de St. Clair, pure white, tipped with violet, lower petals beautiful purple, reticulated with white; Cordelia, rosy lilac, lower petals rich rosy purple, margined with white; Cytherée, lavender blue, lower petals light purple, veined with white; Darius, chrome yellow, lower petals purplish-lilac, reticulated with white; Dr. Berenice, coppery-brown, lower petals ruby-purple, reticulated with orange and white; Exquisite, bronzy-sulphur, lower petals rich purple, veined and margined with sulphur, bearded with golden yellow; Fairy Queen, white, feathered and grained with purple; Gideon, yellow, lower petals crimson-purple, heavily veined, and reticulated with sulphur and white; Hericart de Thury, chrome yellow, lower petals brownish-crimson, veined and reticulated with sulphur and white; Imogene, bright lavender, lower petals soft azure blue, centre white; Jacquesiana, reddish-bronze, lower petals crimson, reticulated with yellow and white; La Fristosse, primrose, lower petals crimson, heavily reticulated with yellow and white; Leopoldine, yellow, lower petals purple, margined with sulphur yellow, heavily striped with white; Madame Chereau, white, all the petals beautifully edged and barred with violet; Pacquit, purple, with light centre, lower petals reticulated with white; Poiteau, white, suffused with lavender, lower petals rich purple, reticulated with white; Racine, primrose, suffused with lilac, lower petals rosy-purple, reticulated with orange and white; spectabilis, velvety-purple, shaded with black; Unique, white, lower petals purple, heavily veined and margined with white; Victorine, satiny-white, blotched with purple, lower petals violet, purple-veined, and reticulated with white; Walner, azure-blue, lower petals light purple, veined with white. The thirty kinds named above are really splendid varieties; and, being hardy plants that can be purchased for about 18s. per dozen, any one who adds them to his mixed borders of hardy plants cannot fail to derive much pleasure and interest from them.

D. THOMSON, in "The Gardener."

Diseased Phloxes.—Is there anything known of a disease that affects Phloxes, more particularly P. decussata? Mine have suffered severely this season, and they did so partially last year. After they commence growing, they appear to experience a sudden check—sometimes all the shoots, sometimes one or more. The stalk thickens, the leaves shrivel, and they look as if the sap had been checked and coagulated, so to speak, in the stems. They never recover during the whole year, and do not flower. Phloxes appear to me to be more delicate than they were formerly. Is that really so? Any information on the subject from your correspondents would oblige—ROSE.

HOW TO PACK FLOWERS.

THERE are few persons who have been accustomed to receive cut flowers by post who have not experienced the mortification, on opening the box, of finding them all fallen to pieces, crushed, or otherwise injured. We therefore propose to give a few directions on the subject, and believe that, if attended to, both the sender and receiver will be spared the mortification alluded to. Always cut the flowers early, in the cool of the morning, and when in their prime. Take a piece of cotton-wool, wet it, and wring it out, then twist it about the stalk. If tin boxes be used, they must not have sharp corners, or they will be rejected at the post office, but, when properly made, they excel all others for the purpose in question. At the bottom of one of these place a piece of stout brown paper (if thin, double it) ; let this be well damped, then lay the flowers carefully in, placing a piece of silver or tissue paper between each, to prevent their bruising each other. Over all place a piece of the same paper, and on this a little cotton-wool. Cover the box with paper, and the flowers will reach the extremities of the kingdom in good condition. Let us add the modes of faulty packing, to warn our friends against their adoption :—1. Placing the flowers in contact with dry cotton-wool, which clings to them, and abstracts their moisture. 2. Putting them in thin boxes, such as have contained lucifers, &c., which invariably get crushed in passing through the post office. 3. Putting the cotton-wool about them too wet, the moisture from which gets shaken over the flowers, and spoils their colours. 4. Cutting the flowers after exposure to the sun, which ensures their falling to pieces on the journey ; this also occurs if the blooms be stale. Some persons, sending seedling flowers for an opinion regarding their merits, think it best to cut them when not fully open, knowing that they will expand in water ; but they should learn that they do not show their true character, either in shape or colour, under such circumstances. A better plan is to cut off the pistil directly it can be done ; this will ensure the flower lasting a considerable time.—"Florist."

FLOWERS FOR THE POOR.

PERSONS who love flowers must be possessed of some refinement. The delicacy and grace of plants, the manner in which they reward by their increased beauty any care bestowed on them, their loveliness of colour, their elegance of shape, and their sweetness of perfume, are all points which tend to make a love of plants a great instrument in the cultivation of some of the best parts of our nature. Very much has been done of late years to encourage the love of flowers among the population of our great cities. It seems to us that of late years the windows and balconies of the rich are even fuller than before of flowers, and of such hardy-growing plants as will stand the smoke of towns; while, among the poor, flower shows and distributions of plants from the park gardens have done much to encourage flower growing and to bring plants within their reach. The late Lady Augusta Stanley, among her many good works, was specially interested in the cultivation of the love of flowers among the poor, and at no time was she more happy than on the day when the Annual Westminster Flower Show was held close to the Deanery, and the poor people came to the *fête* as well as the rich. Another good work, in which many ladies have been interested, and in which even children have been able to take their part through the sweet agency of flowers, has been the collection in the country of some of the treasures both of garden and hedgerow, and the sending them into towns where, through the help of other ladies, they have been distributed to the chambers of the sick and aged poor. All of us know how wearisome the walls and furniture of even the best-appointed sick room becomes when the tired eyes gaze day by day on the same objects in the same places. A new book, a change of a picture, a new ornamental trifle, gives a new look to the too familiar objects. But nothing gives so thorough a change or refreshment as a plant or a flower. The flower need be of no uncommon kind. The poorest little wayside blossom is interesting to the eyes that have been long debarred from seeing the country. Fresh flowers are a gift which all may offer and all may accept; and nothing sent to an invalid affords a more acceptable present. In our columns we have more than once advocated the cause of "Flower Missions," as they have been called; and, as spring advances and the near approach of summer is hoped for, we would venture to recall the subject to the attention of our readers. Not flowers alone, but Mosses, fine Grasses, sprays of Hawthorn, and other tree blossoms; even beautiful branches of leaves are much prized and welcomed in the homes of the sick and aged poor. Let those who have worked for flower missions before either continue or begin with renewed energy their pleasant ministrations; and let others who have not done so before take up this work, assured that they will thereby be dispensing great and pure pleasure.—"Queen."

MOSS ROSES.

The original, or old Moss Rose, is supposed to have been introduced from Holland in 1596, but as to its origin no satisfactory account has ever been given. It is, however, generally believed to be a sport from the Old Provence, and from the close resemblance which the flowers bear to those of that kind except as regards the mossing—this is doubtless correct. Although several hundred varieties of the Moss Rose have been raised since the introduction of the original, none are superior, if equal to it, in point of beauty or fragrance; its long handsome buds, covered with tufts of the most beautiful mossy excrescence, make it interesting and beautiful in all its stages. The Crested Moss Rose, or, as it is sometimes called, Crested Provence, is most peculiar and beautiful; the beauty of its bud alone should claim for it a place in every garden. The Moss Roses are mostly of delicate growth, though some are vigorous and robust in habit, and form good standards, but, as a rule, they all succeed best when grown upon low stocks, or otherwise upon their own roots; the latter mode is best suited to the old Moss, and no garden wherever Roses are grown should be without a bed or two of this old favourite. It requires rather high cultivation and close pruning, and, generally speaking, rather better treatment than ordinary kinds. In wet or cold damp soils it does not thrive, a warm dry soil being required for it, and this well supplied annually with manure. If at any time plants of it appear to decline in health, they should be taken up and replanted in fresh loamy soil and cut hard back. The following descriptive list, taken from my Rose book recently published, contains all the best of the Moss Roses at present in cultivation:—

Common Moss Rose.

Alice Leroy.—Rosy pink, with handsome mossy buds, moderate size, and full, free-flowering, and good habit; a good and useful Rose, forming a good standard.

Baronne de Wassenaer.—Deep rose, very large and double, buds moderately well mossed, habit vigorous; a very showy and useful Rose, and one which forms a good standard.

Celina.—Velvety-purple and crimson, buds well mossed, and very beautiful; flowers moderate size, full, and when newly opened very beautiful; habit of growth rather too dwarf; requires rich soil and close pruning.

Clemence Beaugrand.—Soft pink, a handsome and well-mossed bud, flower large, having a fine broad petal, not very full; a good Rose, of free habit.

Common, or Old Moss.—Pale rose, globular, very large and full, and deliciously fragrant; buds well mossed, habit free; the most beautiful of all Moss Roses, and one which should be grown upon its own roots in rich soil.

Comtesse de Murinais.—Pale flesh when newly opened, changing to pure white, large and double, though not very full; habit robust; one of the hardiest of the white Moss Roses.

Cristata, or Crested Provence.—Pale rosy-pink, changing to pale rose; globular, very large, and full; buds beautifully crested; an interesting and beautiful Rose.

Frederic Soulie.—Crimson shaded with purple, large and full; a well-formed and excellent Rose, and one which, like the last, has a moderately vigorous habit.

Gloire des Mousseuses.—Pale rose, the outer petals whitish, one of the largest and best of Moss Roses; buds large and handsome; habit very vigorous, forming a good standard.

Gracilis, or Prolific.—Deep pink, buds handsomely mossed, flowers large, globular, full, and of good shape; an excellent Rose, moderately vigorous in habit.

John Cranston.—Shaded violet-crimson, colour rich and good, flowers of moderate size, expanded, full, and well formed; habit free.

Julie de Mersant.—Rosy-pink, moderate size, blooming in clusters, buds small and very pretty.

Lanei.—Deep brilliant rose, bud round and handsome, and well mossed; flowers very large, full and excellent; one of the best of the Moss Roses.

Luxembourg.—Purplish-crimson, flowers large and full; a very old variety, of most vigorous habit; useful as a pillar Rose, or as a tall standard.

Marie de Blois.—Bright rose, large and full; an excellent variety, with well mossed handsome buds; habit robust and good.

Princess Royal.—Pale flesh, very compact and full; flowers rather small, though quite distinct, and very beautiful; habit moderate.

Reine Blanche.—Pure white; flowers of good size and tolerably double.

Unique.—Pure white, in dry weather slightly tinted; evidently a sport from the Old Unique Provence, which the flower much resembles, with the addition of having mossy buds; habit dwarf and delicate.

White Bath.—Paper white, very beautiful and distinct; one of the best white Moss Roses in cultivation. JOHN CRANSTON.

King's Acre, Hereford.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Perennial Mountain Forget-me-not (Myosotis rupicola).—This promises to be extraordinarily beautiful this season. Hundreds of tufts, scarcely more than 1 in. high, are covered with sheets of flower-buds, some already expanded and most lovely. Even in small pots they are showing masses of flower.—JAS. BACKHOUSE, *York.*

Cyclamen-leaved Windflower (Anemone palmata).—Mr. Harpur Crewe says (see p. 406) that this barely exists, and does not flower, with him. Here it thrives and flowers freely in the open border in ordinary garden soil. When in bloom it is a showy and beautiful plant, its only fault being that it only unfolds its fine bright-yellow flowers during sunshine, being seemingly reluctant to exhibit its beauties during the afternoon or on a cloudy day.—OXON.

Adonis vernalis.—It is strange that this fine old and perfectly hardy plant, with its brilliant tufts of Anemone-like flowers and beautiful foliage, is not more generally cultivated than it is. I have a fine plant of it which has been undisturbed for some six or eight years, and which has produced some three dozen blooms that on a bright sunny day are quite dazzling.—J. W.

Cow Parsnip (Heracleum giganteum).—This, one of the earliest of fine-foliaged plants, makes a grand display at this season of the year on semi-wild banks, or as a background plant in large borders; care should, however, be taken to see that it does not over-run choice plants of a weaker kind, as, when once established, it spreads rapidly. Its chief fault is going off early in the season and leaving unsightly gaps, which have to be filled up with other plants. —J. G.

Erythrina Crista-galli in the Open Ground.—It is said of this plant (see p. 472) that "it is easily managed by keeping its thick, clumsy root in a dry cellar in winter," &c. I would suggest, as a far better plan, to leave it in the open ground. The plant is perfectly hardy; it dies down early and comes up late—but, when well established, it sends up stems 5 ft. or 6 ft. long, covered with its brilliant flowers. When grown thus the flowers are of a much richer colour than when grown in a conservatory. I should like to know if it ever ripens seed in England.—H. N. ELLACOMBE, *Bitton Vicarage.*

PLATE XXII.

COX'S ORANGE PIPPIN.

Drawn by H. HYDE.

This is probably the finest Apple in cultivation; other sorts have had their day, but have settled down into a rank below this. A few years ago there was quite a furore in the pomological world, respecting the wearing out or otherwise of the Golden Pippin and the Ribston Pippin, and the theories of such an able physiologist and raiser of Apples as the late Mr. Andrew Knight, with regard to that matter, have been entirely disproved, for the present healthy character of these two kinds incontestably shows that weakness has not destroyed the Golden Pippin, nor canker eaten up the Ribston Pippin; in fact, there seems no valid reason why varieties of Apples should not last for ever, provided the system of culture be correct, and they be not neglected for novelties: for trees and plants renew their lives with the individual, and are in no way influenced by the life or death of their original or remote progenitors, provided these have not transmitted to them some inevitable legacy of hereditary disease. It even seems possible, by skilful cultivation, to make varieties of vigorous plants outlive such maladies. Granting, for instance, that weakness is hereditary to the Golden Pippin, and canker to the Ribston Pippin, which many have assumed, it is, nevertheless, indisputable that there never were so many clean and healthy trees found of either sort in gardens as there is at present. Cox's Orange Pippin has the advantages of youth and of moderate strength on its side; though not one of the strongest growers, it shows no symptoms of canker, if planted on a suitable site, and cultivated with ordinary care. It comes from a good stock, and if size, colour, form, juiciness, crispness, sweetness, and long keeping be necessary qualifications for a fine dessert Apple, then Cox's Orange Pippin should claim the first position. Its size is that best adapted for effectiveness, viz., medium—neither too large, nor too small. The form is regular in outline, roundish-ovate; the stalk short; eye, medium-sized and open. The colour varies much, according to the site on which it is grown, as is the case with all Apples. Much as colour is valued by many, and often as it is accepted as a test of quality by some, it is at once the most fugacious, capricious, and uncertain characteristic of fruits. Cox's Orange Pippin has, however, all the richest and most pleasing colour of our finest Apples. The ground colour may be defined as green running into yellow, suffused with red streaks, with dark and ruddy red where exposed to the sun. It is a fruit of which the lover of good Apples never tires, and it does not pall on the palate like mealy or softer kinds. It has also a very long season, for it is frequently fit for table in the month of October, lasts good throughout the winter, and may, if carefully stored, be had in good condition even through April. These long-keeping qualities add much to its value, and, to develop them to the utmost, this first-class dessert fruit should be grown in different aspects and of different forms and sizes. It forms a good orchard tree on the Crab or Nonsuch stocks; the longest-keeping fruits are often gathered from such large and free-growing orchard trees. Worked on the Paradise or Doucain stock Cox's Orange Pippin is one of the very best varieties of Apples to form pyramids, bushes, or cordons; on the latter especially the full beauty, quality of the fruit, and fertility of the trees are strikingly brought out. Those grown close to the ground as cordons are almost fit for table as soon as gathered, and are distinguished by a size and quality which even this fine Apple does not always acquire on larger trees. Not only should Cox's Orange Pippin be ranked as equal to the Ribston Pippin as a dessert fruit, but it is also one of the very best for culinary purposes. Those who have never eaten the finer dessert fruits cooked have a new sensation of gastronomic pleasure in reserve, of which they can form no idea from the eating of the finer so-called kitchen Apples, rendered positively insipid by sugar of inferior quality or otherwise. Cox's Orange Pippin should be cooked and eaten without any addition whatever, and the perfume and flavour will be found vastly superior to anything in the form of cooked Apples. It only needs a trial in the kitchen to establish its supremacy as one of the best and most useful Apples ever admitted to that department, and as soon as it is found that it is not only cheaper, but better to grow sugar and flavour, than to purchase the one from the grocer, and the other from the chemist or confectioner, such Apples as Cox's Orange Pippin will be grown in thousands of tons for cooking and preserving. D. T. Fish.

[Mr. Turner, of Slough, informs us that this Apple was raised by Mr. Cox, of Lawn Cottage, Colnbrook, in 1830. Of two pips of Ribston Pippin, sown in a pot by Mr. Cox, one turned out to be Cox's Orange Pippin, and the other Cox's Pomona, both remarkably fine Apples. These Mr. Cox gave to Messrs. E. Small & Son, nurserymen, Colnbrook, in 1836, and they were sent out by that firm four years later. Cox's Orange Pippin was awarded a Queen Adelaide medal at a show of fruit held in St. James's Hall, as the best flavoured Apple in the show. The growth of the tree, which has small foliage, is slender and graceful. Our plate was prepared from specimens of this Apple grown in Mr. Dancer's garden at Chiswick, on trees grafted on the French Paradise stock soon after the discussion which took place respecting it some years ago. They have yearly borne abundant crops of large fruit, bright, and excellent in flavour.]

Pruning and Training Gooseberries.—It is said that in Guernsey the cultivation of Gooseberries is particularly well understood, that the Gooseberry bushes, or rather trees, when standards are pruned so as to keep them quite hollow in the middle like a cup, and that this facilitates the growth and ripening of the fruit, and also the picking of it. Is it not a fact that Gooseberries bear to the end of the youngest shoots, and consequently that there would be a manifest gain in growing them like espaliers, where they could be run out to any length? An old-fashioned green Gooseberry, which, when ripe, had a flavour like that of Violets, appears to be extinct—at least, I am not aware that it is ever seen in Covent Garden Market, and it has disappeared from private gardens. It was a very round Gooseberry, and neither large nor hairy, but I have never known its equal in flavour, although, like my neighbours, I have lost it for many years. It was an abundant bearer.—A. [When Gooseberry bushes are grown as standards, the Guernsey method of cultivating them by pruning the centres of the bushes well out is excellent both as regards ripening the fruit and freedom in gathering it. When Gooseberries are grown on espaliers, they can be pruned by spurring the young shoots, when the fruit on them will get very large and fine for dessert; but where quantities are required for tarts or for bottling, it will be found best to grow them on standards. The leading young shoots on the branches of the bushes grown in the form of espaliers will not, of course, want spurring in until they reach the length required. The old-fashioned green Gooseberry which "A" says had the peculiar flavour of Violets may have been the Green Gascoigne, a variety now nearly out of cultivation. There is another old sort, the Pitmaston Greengage, a smooth and very high flavoured kind, and now not so much grown as formerly, for both it and the Green Gascoigne are too small for market purposes.—William Tillery, *Welbeck*.]

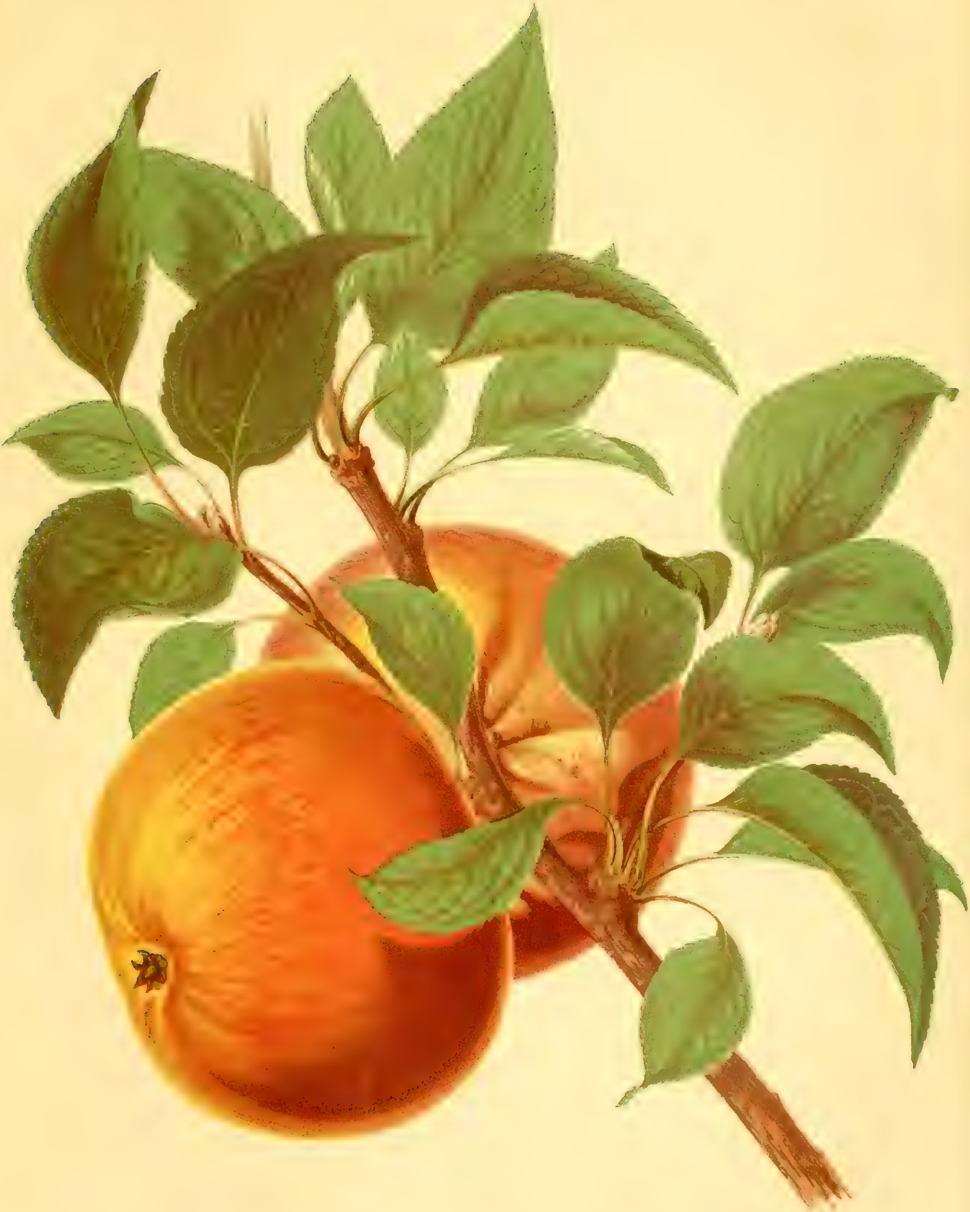
Fruit v. Malaria.—Residents in the Western States of America, and other regions where intermittents and similar diseases result from malaria, state that a regular supply of ripe, home-grown fruit is almost a preventive. Eat the fruit only when fully ripe, and only moderate quantities at a time. Good hardy fruits, and of kinds that bear early and are fertile, should be planted out on every new place, as indispensable to health as well as to comfort and economy, and emigrants to new countries should take a supply with them, as the best medicine chest they can provide.—J. J. Thomas.

The Ribston Pippin in Nova Scotia.—The old Ribston Pippin, one of the best of dessert Apples, is cultivated quite extensively in King's, Annapolis, and Hants Counties, Nova Scotia, and on a clayey loam comes to good perfection. The tree is not a vigorous grower, and is rather a shy bearer, but bears more or less every year. The fruit is often in perfection in February and March, so we learn from the report of the American Pomological Society.

To Prevent Nails from Rusting.—Nails used for fastening shoots to brick or stone walls soon rust and break, unless prevented by some previous preparation like the following:—Before using the nails, heat them red-hot, then throw them into cold linseed oil; this will give them a coat of varnish, and preserve them from rusting and becoming brittle.

Profits of Orange Growing.—At Philadelphia, in Fulton Market, and at various places in Central New York, the common sweet Oranges of Florida have been sold at 4s. per dozen, when Oranges from the West Indies and from the Mediterranean were selling at 1s. per dozen. I have no hesitation in placing the present annual average income derived from easily accessible groves in full bearing at £200 per acre. I know instances in which this rate has been greatly exceeded. It is advisable, however, for the producer not to expect a nett income of more than £100 per acre—100 trees to the acre, 500 Oranges to the tree, and 4s. per 100 for the Oranges above the cost of production.—P. P. Bishop.

[illegible] *The Garden* [illegible]



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THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Vines and Red Spider.—The plant louse, generally but erroneously called red spider, although it does not increase quite so fast as green fly, is even more injurious to plants than that pest, particularly such as have soft leaves, like the Vine or the Peach, and its effects are not only of a most serious nature during the spring season, but also during the ensuing summer. If proof of this were needed I might point to the way in which it injures the growing crop of Grapes when the leaves of the Vines that bear them have been allowed to become only partially affected; so apparent is this that even in the case of strong vigorous Vines that are not over-cropped, the fruit will always be found to lack colour if spider has been permitted to establish itselfon the foliage for a short time only before it is ripe, and its weakening influences are always perceptible in the ensuing season, even if the leaves have not been affected by it until after the crop has been gathered. In thus pointing out the effects produced by these (to the uninitiated) insignificant, but nevertheless certain destroyers of plant life, I am simply giving a note of warning; for, in such seasons as the present, when all outside vegetation has been retarded by the unprecedented continuance of ungenial weather, the result always is that the weakened vitality of plants of all kinds that are subject to the attacks of these pests induces them to appear in larger numbers, and that too often before their presence is suspected. This will be found to be the case, especially with Vines under glass that were subject to spider last year. Water, both in the shape of moisture in the atmosphere, and still more when applied by means of the syringe directly to the leaves, is the best preventive; and as I have before urged, although it has a tendency when it reaches the fruit through the syringe, to impair the bloom upon the berries, it is still much better for amateurs to use it than to follow the more approved practice adopted by experienced Grape growers. I should therefore recommend its daily use after the fruit is set until the crop begins to colour, applying it both to the under and, as far as possible, to the upper sides of the leaves, so as to moisten the whole, also keeping the atmosphere humid by throwing water about on the paths, walls, and on every other available surface. Not only is this necessary for the purpose in question, but also for assisting the berries to swell up to their full size. That peculiar condition of this fruit when developed to the highest point and described as hammered is never present when there has been any deficiency of moisture in either the atmosphere or the soil. An insufficient use of water to preserve the requisite amount of moisture in the air may be said to be almost a general failing in the case of amateurs' Vineries. Beginners and those who have not had considerable opportunity of seeing the effects produced where enough moisture in this way is used whilst the crops are swelling until the time the berries begin to colour, can form no idea of the difference in size and general appearance when their requirements are thus fully supplied; this, together with giving air in the mornings just as the sun comes upon the glass to warm the internal atmosphere a little, coupled with the all-important operation of closing early in the afternoons so as to shut in plenty of sun-heat, has the effect not only of perfecting and hastening the maturity of the present season's crop, but also the equally important point—the ripening of the wood for another year, without which, no matter how good the condition of the Vines in other respects may be, it will be useless to look for fruit. There is no fruit that amateurs who possess a glass structure of any description are so fond of as Grapes, and none in which they take so much interest in cultivating; but to succeed, especially where little or no fire-heat is employed, it is at all times necessary to attend to the directions given above, particularly during such an exceptional spring as the present.

Peaches.—Under glass, where no artificial heat is used, or so little as to merely bring them in a few weeks before those on the open walls, will now require attention as regards still further thinning the fruit; it is best to do this at different times, going over the trees and removing some at short intervals. In this operation amateurs are liable to make mistakes; it is not alone the removal of the superabundant fruit that is required, but the retention of those that are placed best and have the necessary room to come to maturity. Where the trees are grown on walls, and where there is enough in quantity to select from, never leave any that are placed on the back of the shoots, that is, betwixt the shoot and the wall, for in such positions they evidently cannot have room enough to grow. As far as possible, let all that are retained be directly in front of the shoots, where they can have nothing to interfere with full development, and where they stand in a situation to receive the full influence of the sun. Syringe diligently every afternoon during all stages of the crop, from the time the fruit is set until it begins to colour, not merely sprinkling the trees, but giving them a liberal application so as to wet the whole surface of the leaves; if this be assiduously attended to, its effects will not only be the production of large handsome fruit, but also a clean, healthy condition of the trees, that augurs well for the coming season's supply.

Pits and Frames.—Cucumbers and Melons grown in the old-fashioned but still useful manure beds will have had a hard time of it for many weeks past. Not only has the comparative absence of sunshine been a serious drawback to healthy growth, but the continued prevalence of strong cold winds has made it difficult to keep up the requisite temperature, still further aggravated in cases in which the beds have occupied cold, unsheltered situations; during such weather repeated linings of new hot fermenting material are indispensable, and these should always be applied before the heat has got too low, and a sufficient amount of the material should be used, or the heat cannot last long. When the weather has become milder, Grass mowings from lawns, if possible, mixed with half their bulk of last autumn's gathered leaves, will be sufficient to maintain the requisite amount of warmth. Cucumbers in the earliest beds should be kept well thinned out, removing all shoots that are in excess of what are needed for bearing purposes, remembering that it is much better to keep them somewhat thin than to overcrowd. It is a great mistake to allow a confused mass of entangled growth to be formed with the certain result of its having to be removed after it has contributed seriously to exhaust the plants. It is an easy matter to keep the same plants going for a considerable portion of the season if they receive timely attention in thinning; this can only be accomplished by going over them every week, and removing all growth that will not be required as soon as it makes its appearance, always, after the plants have attained a moderate size, pinching off the shoot immediately beyond where a fruit shows itself, and, in the case of free bearing kinds, considerably reducing the number of the shoots; along with this, it is indispensable to syringe daily with tepid water, not merely just damping them overhead—a process by some thought to be sufficient—but giving the leaves a thorough wetting, getting to their under surface as much as can be done, without which it is impossible to keep down insects. Never at any time of the year use cold water; if possible, let it be considerably warmer than the soil of the beds. Plants that have been bearing some time will now be benefited by liberal applications of manure-water every week, not using it too strong. Whatever is used in the preparation of this, whether it be guano or farmyard manure, a little soot is an essential addition; it not only assists in invigorating the plants, but it is distasteful to animal life of all kinds. If, as recently recommended, fermenting manure has been prepared for making up Melon beds whereon to place spare frames that have been used for bedding plants, these will shortly be ready for the plants, which, if sown and potted on as suggested some weeks ago, will be in a condition for turning out as soon as the soil is in a fit state for planting them. Thus managed, they get a considerable start compared with smaller plants, which is important, as the time they have to grow and mature their fruit leaves nothing to spare. The plants in the earlier made-up beds will now be fast swelling off their fruit, and should receive a sufficient supply of water. Syringe them freely every afternoon, but in this, as well as in applying it to the roots, the collars of the plants should not be wetted more than can be avoided, as many of the more tender kinds are liable to go off at that point, especially when grown in frames, a complaint much more frequent now than it was a considerable number of years ago, and which is aggravated by either the base of the plant, or the soil around it being wet.

Flower Garden.—Bedding plants that have been planted out should receive every attention in order to induce them to grow freely, cover the beds, and produce flowers in the least possible time. The untoward weather which we have experienced has hitherto prevented much progress being made in bedding out, and if all be not done to further the growth of the plants, the cold nights of autumn will be on them before much display has been made. See that all subjects of a straggling habit, such as Verbenas, Heliotropes, Ageratums, and Petunias, are at once pegged down as soon as they are planted out, otherwise they get blown about and broken, and the collars of the plants get injured. Another source of injury, and in some cases a portion of the plants dying off without apparent cause, is an insufficiency of water; this often occurs where the mistaken practice exists of applying it in small sprinklings without giving enough to moisten the whole sub-stratum in which the roots are; than this nothing can be more certain to produce failure. The more tender plants, such as Iresines, Coleus, Alternantheras, and subjects of a similar character, should now be planted out if the weather be warm and settled; but in this, as in most other gardening operations, it is anything but good practice to be guided by a particular date. Even if the time has arrived for doing a certain thing, if the weather be not suitable, it is much better to wait for a more favourable opportunity.

Conservatories.

Much difficulty is generally experienced in keeping up a sufficient amount of atmospheric moisture in the above structures at this season, without causing a certain amount of discomfort by wetting the pathways or foliage of plants immediately contiguous thereto. To obviate this as much as possible, the borders and any hidden parts under the stages or among the pots should be well damped at the time of watering the plants, which operation should be performed at the most convenient part of the day, when the house is least likely to be visited. Taking the welfare of the plants into consideration, the proper time for such work during the summer months is in the evening, as then the water has time to soak well into the balls of earth, thereby benefiting the plants to the greatest extent, and filling the sap-vessels before fresh demands are made upon them. Where Camellias are planted out, or have to remain permanently in conservatories, they should now be well syringed at least once a day, to counteract the exhausting effects of a dry state of the atmosphere. Unless they are well attended to in this respect, they are sure to get out of health, or become infested with small white scale, which is one of the most troublesome insects to get rid of, as it can only be removed by hand-washing.

Passifloras, Tacsonias, and similar roof-climbers will now be growing most rapidly, necessitating frequent attention in thinning and regulating the shoots. These never look better than when allowed to hang gracefully down from the girders, thinly clothing the roof of the house, that its architectural beauties may be seen to advantage. Roofs of such structures, draped lightly with foliage in this way, are far more pleasing and effective than if the climbers be allowed to become a crowded and entangled mass. The distance at which the shoots should be left from each other will depend in a great measure on the kind of conservatory the plants are grown in, and the amount of light that can be admitted to the occupants beneath them; but, taking the appearance of such climbers as Passifloras alone into consideration, they show off to the greatest advantage when left about 1 ft. apart. The borders in which these are growing, if at all of limited extent, must now receive abundant supplies of water, to make up in some measure for the small quantity of soil the roots have to feed upon. Liquid manure, if made from guano or soot, or some other strong fertilising agent not likely to give off an offensive smell, may be used with great advantage; and, if given frequently during the growing season, the plants may be kept in health and vigour for many years.

Lapagerias are now making their young growth, and if in properly-drained borders, with plenty of rough, peaty soil, they can scarcely have too much water for the next three or four months. In their native habitat they grow and bloom during the rainy season, when the sky is constantly overcast, thus clearly indicating the kind of treatment necessary to cultivate them successfully. Taking the natural conditions as a safe guide, it points equally to the necessity of growing them in shady positions, and keeping the atmosphere moist, or where this cannot be conveniently done, the plants should be frequently syringed, which will help to keep down scale and thrip, insects they are rather subject to, especially if grown in a house where the air is at all dry and uncongenial. Any that are growing unsatisfactorily, through defective drainage and sour soil, should at once be examined and remedied, as they will bear transplantation or any disturbance of this kind better when growing than at any other time. In lifting them for the purpose of adding fresh drainage, the close inert soil must be forked carefully out from the roots, the greatest care being taken that they be not bruised or broken. Soft, porous brick, or broken pots is the best material to be employed for drainage, and should be 6 or 8 in. at least in depth, with from 2 ft. to 2½ ft. of rough lumps of peat and sharp sand resting upon it. To prevent the drainage from becoming blocked, fresh cut peaty turves should be laid over it, and, except for filling in among the roots, any other that is added should be in the same state, to ensure proper and lasting porosity. The operation should be carried out as quickly as possible, that the plant may not suffer from the roots becoming dry or the top flagging, to counteract which syringe freely overhead, at the same time keeping it well shaded till it starts again into growth.

Habrothamnus elegans.—This is one of the most useful and showy plants it is possible to have, either for training on walls or growing in the bush form in pots to decorate conservatories or greenhouses. Planted out where it has plenty of root-room and a temperature in winter ranging between 45° and 55°, it will flower continuously and almost as freely at that season as at any other time of the year. It is, perhaps, never seen to better perfection than when trained to a wall and allowed to form plenty of breast-wood, as then every shoot stands well out and arches gracefully, laden with rich glossy clusters of flowers. To assist them in giving a constant succession of these any old growth that has ceased blooming should at once be cut back, leaving an inch or two at the base to form a kind of spur from which the wood will start and replace the portion removed. Any that are becoming exhausted should have a portion of the old soil removed to be replaced with a mixture of fibry loam and rotten manure, in which they will soon root and grow with great freedom. Being gross feeders they will require plenty of manure-water when carrying a heavy crop of bloom, and it likewise will have a good effect in keeping the leaves a dark healthy green colour. As a pot plant it is equally valuable, and, with a little management as to resting and pruning-in, it may be had in bloom at any season desired. Cuttings struck now and grown freely on during the summer will make useful-sized plants for winter flowering, when they can be brought gradually on as required by subjecting them to a little artificial heat. When grown in pots they must be liberally fed and have plenty of root-room, or the leaves soon assume a sickly appearance and fall off at the lower end of the branches.

Chorozemas will now be going out of bloom, and should be well thinned by cutting away that portion of their growth that has borne flowers, in order to admit of that now forming being laid in its place. For the present this should be allowed plenty of freedom, as any bending of the young shoots to tie them down to a trellis, or train them in any formal way, would greatly impede their growth. As soon as they begin to start freely they should be shifted on into larger pots, using rough peaty soil, and fibry loam, in about equal proportions, after which they should be placed in the warmest part of the greenhouse to complete their growth.

Azaleas will now be at their best, and should be kept in cool, well-ventilated houses, so as to prolong their season of blooming to the utmost extent. Dryness at the root soon cuts short their beauty, an arid state of the atmosphere has the same effect, therefore both must be guarded against as much as possible. The immense number of blooms well-grown Azaleas usually carry is a great tax on the roots, and unless these are kept well supplied with water they fail to respond to the active demands made on them; and if the supply fail but once, the plants soon relieve themselves of their burden by shedding their blooms. If they are confined to moderate-sized and well-drained pots, it is almost impossible to over-water while they are in flower and making fresh growth. Keep the air of the house well charged with moisture by damping well under the stages, or any other available surface.

Fuchsias.—Autumn or spring struck plants of these should b shifted on as they continue to fill their pots with roots, using for the purpose, good fibry loam in a rough lumpy state, to which should be added about a fourth of sweet, mild manure, such as may be obtained from old Mushroom beds. To induce them to break back freely, the points of the lateral shoots should be nipped out, and occasionally it may be necessary to serve the leader in the same way, that the plants may be regularly furnished with side branches from top to bottom, so as to make handsomely shaped pyramids, in which form Fuchsias always show to the best advantage. Where it is required to have any early in bloom, they should have less shade and atmospheric moisture afforded them, which will soon harden the young wood and hasten the desired result. On the other hand, where free growth is wanted, the plants should be kept well syringed and moderately shaded, till they have attained the requisite size, when they may soon be had in flower by resorting to the above treatment. Any that have filled their pots with roots will be greatly benefited by being watered with weak liquid manure once or twice a week, or even more frequently, as they get well forward in bloom.

Pelargoniums, of both the show and fancy kinds, ought now to be liberally assisted in the same way. Where any of these are confined to very small pots, they may with advantage be placed in shallow pans to ensure the roots being kept well supplied till the plants have discontinued blooming. The Zonal varieties should be kept well up to the light to induce a firm short-jointed growth, without which they go too much to leaf and do not flower at all freely. A pit or frame suits them best at this season, as they can be fully exposed by withdrawing the lights whenever the weather is favourable. When growth is nearly completed this adds much to their flowering capacity by the hardening effect it has on them. The double Pelargoniums especially, usually so strong, gross, and sappy when grown under glass, are greatly improved by being subjected to the above treatment, by which their growth is much moderated and their blooming proportionately increased. As these are much more valuable after the show and fancy kinds are over, the flowers should be picked off that the plants may for the present be kept growing on and make the finer display when more wanted. Many of the Zonals make useful winter bloomers if struck now and kept free from flowers during the summer so as to rest until late, when a little dry heat will speedily bring them on.—J. Sheppard, *Woolverstone Park.*

Orchids.

At this season some difficulty is generally experienced in keeping the temperatures of the different houses at the right point, some days being warm enough to permit fires being dispensed with, while other days, and the nights generally, are too cold to warrant such a course being followed, even in the case of the Odontoglossum-house; great care is therefore required in only keeping sufficient fire-heat raise the thermometer to the required point, for if the temperature, by means of fire-heat, be allowed to get too high, it necessitates the introduction of too much air, and even this does not remedy the evil; for although, by giving air, &c., the thermometer may be kept almost down to the desired point, there will be a dry, consuming heat in the house that will not nourish vegetation, but, on the contrary, exhaust it. The fires should, therefore, as I have said, be carefully regulated so as to maintain only the necessary amount of heat, and should be allowed slumber, as it were, or go quite out on warm sunny days, starting them again in the afternoon. If there be no fire-heat in a house, it signifies but little whether the temperature gets even 7° or 10° higher than that recommended or not, but too much fire and sun-heat together is very bad for the plants. The regulation of the temperature can be managed by checking the flow of hot water by means of valves, with which the heating apparatus of every Orchid-house should be furnished. The matter in that case would not be left entirely to the firing. Attend to the keeping up of moisture in houses in which the plants are growing by throwing water about under the stages and syringing the back walls. See that the shading is properly attended to, and wash over any part of the glass, where the blinds do not meet, with whitewash with some linseed oil poured in it; it will then adhere as firmly as paint, and be easily removed when no longer required.—James O'Brien.

Hardy Fruits.

After more than a fortnight's continuance of easterly winds, the force of which at times has amounted to a gale, whilst the maximum nightly reading of the thermometer has never exceeded 35°, and has several times been as low as 28°, it cannot be wondered at that fruit prospects are anything but bright; certainly for the time of year such weather is most extraordinary, and, fortunately, unusual. However, we must hope for the best, and take such prompt steps as will insure the health of the trees, and the preservation of such fruits as have passed the trying ordeal by destroying aphides, which abound, as is always the case, during the prevalence of easterly winds. The garden engine or hose should be freely used to dislodge them, and if soapy water be used, say twice a week, for three weeks successively, the trees will remain clean for the remainder of the season. Soap-suds, and clear water applied with force afterwards, are the best antidotes for those kinds of aphides which, more or less, at this season, attack Peaches, Cherries, Currants, and sometimes Plums. On light soil watering will now be necessary, but on heavy retentive soil, if the ground be mulched to prevent cracking, this will not be necessary. Peaches, Apricots, and Strawberries cannot well have too much water at their present stage of growth, that is, unless the drainage be in an imperfect condition; and it should be remembered that one thorough watering is worth many driblets. Strong crowns of Strawberries that have thrown up a large number of flower-stems should have the weaker ones removed; this will increase the strength of those that are left, and the fruit will be much finer in consequence. When the flower-stems are freely thinned, fine fruit is insured without thinning out the fruit separately after it has set: they should never be allowed to get dry, for no fruit suffers more or sooner from drought. The fruit of Apricots, Peaches, and Nectarines should now be finally thinned; it is a mistake to defer this operation till the fruit is stoning or stoned. I have always observed that the fruit has successfully passed this critical period if it had been thinned as soon as well set, and the opposite in every case when the fruit was left till the stoning was complete. The excessive quantity of fruit usually formed makes impossible demands on the tree for nourishment; hence failure, to a certain extent, must ensue if not previously thinned. The new growths or shoots of Peaches and Nectarines that are intended for fruit bearing next year will shortly be sufficiently long to be laid, tied, or nailed in, in doing which, see that each shoot has sufficient space for perfect development of leaf and bud. Strong-growing terminal shoots should be pinched back somewhat closely, when they will break into two or more growths, one only of which should be allowed to remain, the others being stopped at one joint, and if growth still continue strong, pinch again. It will now be safe to remove all superfluous shoots from Pears, Plums, and Cherries, but previous to this all the young wood required to refurnish bare places on the walls should be nailed in. Cordons should have their terminal shoots secured to the walls, and the side-shoots stopped to a couple of joints. Bush and pyramidal trees may be pinched in to a more or less number of joints, according as the trees require furnishing, or the shape they are desired to assume; in any case growth should not be allowed to go at random, according to the new plan now being advocated by some.—W. Wildsmith, *Heckfield.*

Trees and Shrubs.

The cutting and barking of Oak timber is now the most important work in progress. We began here on the 28th April, about a week or ten days later than usual, the weather having been very unfavourable for bark peeling. North-easterly winds and frosty nights have continued intermittently since the commencement, causing a check in the flow of sap, and the foliage on many trees is beginning to assume quite a sickly colour, while the young leaves are curling up through the extreme cold, so unusual at this time of the year. The Oak copses and plantations here are under a systematic course of management, being thinned every fourteen years, averaging about 140 or 150 acres annually, the yield of bark being from 80 to 120 tons. The past three weeks of cold, dry weather, having been a trying time for recently planted trees and shrubs of large size, attention should therefore be paid to these by applying a liberal supply of water, and having the surface over the roots covered with a thick layer of litter. All planting operations should be finished by this time, with the exception of Hollies and Evergreen Oaks, which can be safely removed and started into growth at once, but their roots must not be exposed to the air for any length of time, watering freely head and roots when planting. The past season for forest and ornamental planting has been the most favourable time I ever experienced. We began here in October and planted on without any intermission (except for about a fortnight through the frost and snow) until the end of April. Referring to my nursery note-book, I find that we planted out 77,300 Larches, 4 ft. to 6 ft. high; 7300 Conifers, 3 ft. to 7 ft. high; 26,000 Hardwoods, 5 ft. to 7 ft. high; 200 Hardwoods (Park trees), 15 ft. to 25 ft. high; and about 1400 deciduous and evergreen shrubs; altogether upwards of 112,000 plants. From a recent examination, I conclude that there will not be more than five per cent. of loss throughout the whole. In forming these new plantations, pits for the reception of the plants are dug from 5 ft. to 6 ft. apart. The Hardwoods are not planted until after the Larch, but Laurel boughs or shoots are distributed in the holes at from 12 to 15 ft. apart previous to the planting of the nurses to represent the Hardwoods, the Laurel shoots being counted before distribution; by this method a correct account of Hardwoods required can easily be ascertained, and the arrangement of the masses and the judicious disposal of groups can be better managed after the nurses are planted than before. I use nothing but the Larch as nurses for Hardwoods; it does not take up so much room as evergreen Firs, allows a freer circulation of air, and is, in fact, the best and most profitable plant for such a purpose. If shelter be required I prefer planting a screen or strip of Pines on the most exposed sides—Austrian, Corsican, and Scotch Pines are the most suitable, the former on the outside, as it excels all others as a shelter tree, filling up with Scotch Pine as nurses. If game cover be required Silver or Spruce Firs, planted in clumps and filled up with Larch as nurses, answer the purpose better than indiscriminate planting. I plant the Hardwoods of each sort in distinct, irregular-shaped, sectional masses, according to the nature of the soil and exposure. The old-fashioned plan of planting indiscriminately, probably a dozen or a score of different sorts of trees over an acre of ground regardless of soil or situation suited to the different trees, cannot be too strongly deprecated. In disposing of the different sorts of Hardwood I plant masses of Beech and Sycamore on poor land and on exposed sites; next to these Wych Elm and Sweet Chestnut, and, in the best land and most sheltered situations, Lime, Oak, and Ash. For the sake of ornamental and landscape effect Purple Beech is introduced in clumps amongst the common Beech, the Norway and Red Maple amongst the Sycamores and Sweet Chestnuts; and groups of the White and Lombardy Poplars and American Scarlet Oak amongst the Oak and Ash. The system I adopt here to ensure almost certain success in planting operations is to buy two or three-year-old plants from the nurseries and grow them on in our private nursery, shifting them every two years until they are large enough to plant out. The Larches that were planted out this season averaged about 5 ft. high, with the stems nearly as stout as walking-sticks, and fibrous roots like those of pot plants. The Hardwoods averaged about 7 ft. high, with clean stems and good leaders, having all undergone nursery pruning, and none of them having stood longer than two years without moving. The park trees had stout stems 3 in. or 4 in. through, with well-balanced heads, and roots—a mass of fibres like door-mats. Another reason why success is pretty certain—they are lifted one day and planted the next, the roots never being allowed to get dry. Wherever extensive forest and ornamental planting is carried on a home nursery is almost indispensable.—George Berry, *Longleat.*

THE INDOOR GARDEN.

NATURAL HABIT v. TRAINING AND STAKING.

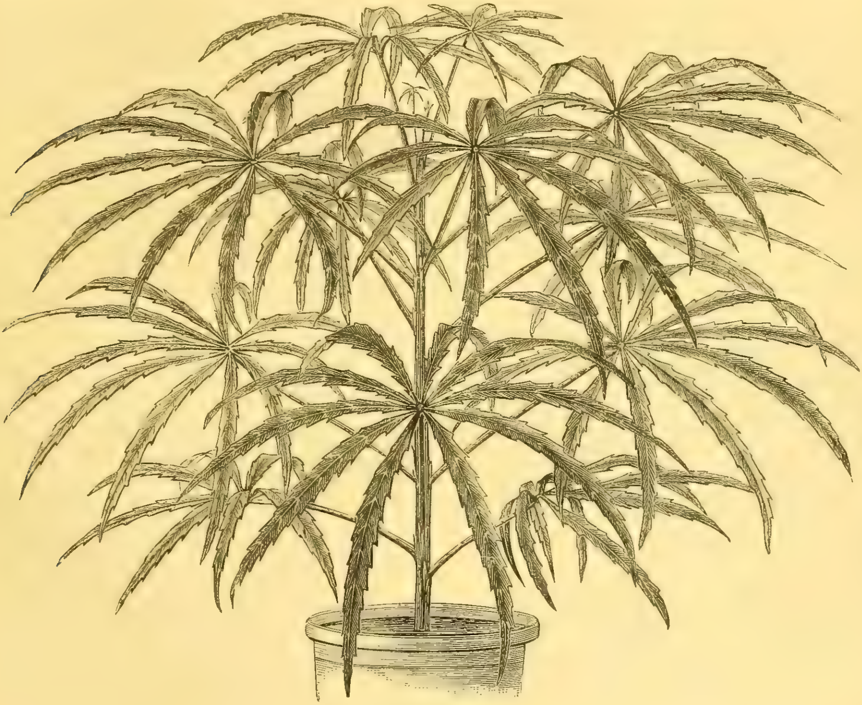
WITH nearly all plant growers now-a-days, it is a foregone conclusion that their specimens, whether for exhibition or not, must be trained into some kind of artificial shape. An Azalea, or a Rose, both of which naturally make handsome bushes, are unworthy of commendation, and quite unpresentable at an exhibition, unless they represent a cone or a pyramid of the most exact proportions. Pelargoniums must be as regular as a gridiron, and as flat as a pancake. Heaths, Epacrises, and similar hard-wooded plants are nothing unless they bristle with stakes, and are as round as balls; and graceful climbers and creepers are twisted in the shape of balloons and other accommodating models of a similar kind. This is no exaggerated picture, for it is one which may be seen at every horticultural exhibition. Ornamental-foliaged plants set the trainer, in great measure, at defiance; but when he can improve them, as he terms it, he does so. I have many a time seen such plants as Alocasias and Caladiums with every leaf staked out in the most methodical way; but usually such plants escape, and, whether on the exhibition table or in the hothouse at home, compensate in some degree for the stiffness and formality which would otherwise be only too apparent. Horticultural exhibitions are most to blame for this state of things. The plant grower, however humble, goes to them for his models, and seeing that the largest and most perfectly geometrical specimens have been awarded the first prize by a jury of eminent horticulturists, he thinks, and quite naturally too, that it is imperative for him to follow the example there shown, and even endeavours to increase its formality. People are, however, beginning to get tired of such stiffly trained plants, and if some good plant grower had only the courage to stage a collection of healthy plants, exhibiting, as far as is practicable in artificial culture, their natural shapes, one can hardly suppose that a jury of sensible men would venture to overlook them. Of course, one need not run into an opposite extreme and renounce the use of stakes and ties altogether; nor would I suggest a disregard to symmetry in the case of plants which naturally assume a definite form; but I protest against the style of training which sets natural habit at defiance, and which insists that every twig and flower be twisted about and tied till they are arranged in such a way that a single bloom could not be removed without creating a blank. I have seen Ixoras that would have been noble bushes, twisted about in all manner of ways in order to have the flowers in the form of a cone; Heaths, with their naturally erect tops twisted hither and thither, that no spot should be unoccupied—one flower being up, and another down; Epacrises with their wreaths of flowers plastered round a bundle of stakes as tight as a drum; Maréchal Niel Roses with all their blooms fixed immovably to one side; and many other subjects, too numerous to mention, similarly abused—just in proportion to their obstinacy or otherwise in conforming to the cultivator's art. Of course, rambling plants must be supported in some way, and others must be staked or trained out to increase their size, to admit air and light, and to accommodate them generally to the circumstances in which they are placed; but, after this has been accomplished, what more is wanted? A Pelargonium, if rationally treated, will make a handsome enough bush without much artificial aid; and, singly or in collections, it will produce a more attractive display than when trained in the shape of a circle, with scarcely a green leaf visible. The much-abused Azalea, too, needs hardly any training at all. It will grow just as shapely as a Rhododendron in the open border, and be as healthy, and flower as well, or better, if left alone: and staged, where and how one will, it will afford quite as grand a display, and be ten times less monotonous, than the finest pyramid that ever was grown, and on which months of patient but useless labour have been bestowed. Then there are the Epacris and Aphelexis, which need no stakes or ties whatever. Perhaps they may not be "furnished down to the pot;" but, if they get light, and room, and generous treatment, there will be healthy foliage, wreaths of flowers in abundance, and nothing to complain of in the matter of shape or symmetry. No one finds fault with the habit of the Rose as it grows in the open border; why, therefore, should it be tortured out of its natural shape when grown in a pot? Soft-wooded Heaths will bear cutting down to get good, stout, flowering shoots, but they want but little more assistance; while the close-growing, hard-wooded varieties certainly do not require a perfect forest of stakes to keep them either in shape or good health. Camellias, too, are sometimes trained like Azaleas, in the pyramid fashion—a most inexcusable practice, for does not the Camellia grow of its own accord as freely and as shapely as a Laurel bush? As to climbers, such as the Clerodendron, Stephanotis, Allamanda, Bougainvillea, Cissus, Lapageria, and others, it might reasonably be maintained that there is no excuse whatever for twisting them round stakes, trellises, or other contrivances of that kind, except to meet the necessities of exhibitors. The natural habit of such plants is to ramble at length like our Honeysuckles or Virginian Creepers, and it is only under such conditions that they can be seen to advantage, and grow most successfully and with the least trouble. In short, the artificial training of pot plants, carried as it is to excess, is the one great mistake in their culture at the present day, and must sooner or later give way under the influence of improved taste. To those who have no other desire than to see their plants healthy and handsome, we would say—give up training after the formal pattern; give your plants room, and light, and air; attend more to potting and watering, instead of staking and tying; and you will have no cause to complain of ill success, and will in time come to wonder that you were ever led away by the practices just described. S. W.

PASSION-FLOWERS.

THESE, on account of their singular beauty and the associations connected with them, are popular plants with most people. P. cœrulea, the hardiest and best known, is a pretty variety which grows and flowers freely on open walls, and in favourable situations ripens its fruit. It does well between the gables of two lean-to glass houses, for example, or on the sheltered end of a cottage with a fire behind it. It likes a moderately light, rich, loamy soil, and if the roots be enclosed on all sides with slates or flags, and not allowed to get down too deeply, they will be much more favourably situated as regards temperature, watering, and general culture than they otherwise would be. How to train it is a consideration, and the simplest plan is the best. It is a mistake to nail the shoots up or across the wall, as is usually done. If the wall be not very high, lead the main limb up to the top direct at the beginning, and then along the top just under the coping. Most likely it will throw out side-shoots as it grows; but, if not in sufficient number, occasional pinching will make it break more freely. The shoots should simply be allowed to hang down on the face of the wall without tying of any kind, and a very graceful drapery they will make, either with or without flowers; but flowers are sure to be produced in quantity. The extension system of training is the best in the case of Passion-flowers. We have seen a lofty-fronted glass structure, 70 ft. long, draped from end to end with them in the manner just described, the shoots being allowed to fall 9 in. apart. Two plants furnished the whole, one being planted out at each end. The culture of greenhouse varieties is pretty much the same as for the hardier kinds. In all cases it is well to confine the roots in a stone box, from 2 ft. to 4 ft. wide, according to the area which the plant has to cover. If practicable, train also in the same way. Take the shoots along the roof in a methodical manner, but let their extremities hang down here and there in order to bring their flowers within reach, and to give the plant a natural aspect. If the roots be well drained, water freely and often, as they soon fill a large box, and get as matted as in a flower pot. Top-dress, too, annually or periodically with rich soil, and additional root-room will never be required. I once had a plant of P. edulis which bore a heavy crop annually for many years, the roots all the while being confined to a box 20 in. square. During the growing season the knife must be used freely in order to remove entirely the shoots where they are too crowded; and, when the plant ceases to grow and flower as winter approaches, it should be pruned well back to the old wood. Stove varieties, such as P. Buonapartia and quadrangularis, may be treated the same as the greenhouse sorts when grown for the sake of their flowers, but, if fruit be the object, more careful and slightly altered treatment is necessary. P. quadrangularis and P. edulis are the two kinds that are most esteemed for their fruit. The first is the large and now pretty well-known Granadilla, and the second has fruit about the size of a pigeon's egg, purplish coloured, and the more ornamental of the two; but both form an agreeable addition to the dessert. I have had fifty or more half-pound fruits on a plant of the Granadilla which was struck from a cutting the previous autumn. Cuttings of the young points should be struck in summer or autumn, and early in February they should be planted out in a 20-in. pot or tub in a good compost of loam, leaf-mould, and manure, and plunged permanently in a bottom-heat of 85° or 90°. As the shoots grow rapidly, they must be prevented from becoming entangled, and be trained within a foot of the glass, and never stopped on any account. If they get crowded, remove some of the shoots entirely, but allow those left to grow on uninterruptedly. About midsummer flowers will be produced towards the extremities of the shoots, and they will continue to appear afterwards at almost every joint; as they expand daily, they must be fertilised with a camel's-hair brush, or they will not set. Maintain a moist and high temperature throughout the growing season; 75° by night and 90° with sun-heat will suit them well. When the fruit begins to change colour, diminish the moisture a little, but at all times keep all the supply at the root, for the abundant foliage makes a great demand upon the roots, and if water be not supplied in abundance the fruit will drop, especially in the early stages of its development. About November, when it is all gathered, prune the shoots hard back, and keep the plants still, but moist at the root, all the winter. Almost all the varieties are subject to red spider and mealy bug; but generous culture and a vigorous application of the syringe will generally keep both these pests in subjection. The best stove kinds are P. amabilis, Belotii, kermesina, edulis, princeps, quadrangularis, and Buonapartia; the greenhouse sorts consist of Innesii, Impératrice Eugénie, racemosa, cœrulea, and Campbellii. J. S.

ARALIA ELEGANTISSIMA.

The foliage of this new and handsome Aralia is of a deep green colour shaded with brown, the mid-rib of each leaflet being white. The stem is erect and furnished with digitate leaves on long, dark green foot-stalks, which are mottled with white; the filiform leaflets, being pendulous, impart a very graceful character to the plant. It has been imported from the South Sea Islands, and is a remarkably effective ornamental foliage plant. Examples of it in good condition have been shown on several occasions by Mr. Bull.



Aralia elegantissima.

RAISING GLOXINIAS FROM SEED.

Some sow seed of Gloxinias every year so as to have always a stock of moderate-sized roots, and also because young plants are supposed to be the most vigorous, which is perhaps true; but when the object is simply to have plenty of plants with little trouble, and also an abundance of flowers large enough for all practical purposes, the best plan is to keep the roots in stock, and repot them annually in successional batches, so as to prolong their flowering season. When the roots get very large they will bear dividing and sub-dividing, if care be taken to secure a bit of the crown with each piece. I have some old plants now which were thus treated. They were potted in 6-in. and 7-in. pots in February, and they measure now 18 in. or more across, and are fairly smothered with fine flower-buds just beginning to expand. I attach no importance to the size of the flowers, for moderate-sized ones are in every way the most useful for cutting, and they look as well as large ones on the plant. When seed is used it should be sown in March, but there is still time to have good plants before winter by sowing now. Sow in a well-drained pan, using a light and fine compost of loam, peat, and sand, in equal parts. The surface of the compost should be made fine and even, and the seed should be sown regularly and thinly, and barely covered over. Set the pan in a warm stove temperature near the light, and do not water for a few days after sowing, and sparingly at all times, for though Gloxinias like a warm, moist atmosphere, they do not care to be drenched at the root, being like Gesnera in that respect. When the seedlings are fairly up, and can be well handled, pot them off in the same light, rich compost as before, and take care not to injure the tender leaflets, which are easily broken. Keep them throughout the season in a genial stove temperature—the back shelf of a Pine stove is a good place for them—and they should be placed near the light, shading them from bright sunshine, which is apt to brown the foliage. As winter approaches, or when the plants show signs of maturity, gradually withhold water, and let them dry off at the root and go to rest, when they may be stored away in their pots on a dry shelf in the stove or potting shed, but they should never be subjected to a temperature much below that of the stove in winter, or they will be apt to rot—the fate of all tuberous-rooted tropical plants under such circumstances. When the tubers begin to sprout in spring they should be shifted, using pots according to the size of the roots, and they should be introduced again to the stove; but it is better to withhold water for a time until they have fairly started, when it may be given, and continued when required during the season, as before directed. I always put the plants in their flowering pots at the beginning, as there does not appear to be any advantage in shifting them on, and, besides, the foliage is almost sure to get injured by handling. Chef.

Thawing Plants.—Mr. Peter Henderson speaks against the popular treatment of placing frozen plants in the shade and sprinkling them with cold water, as being quite ineffectual, if not injurious to them, and mentions the following circumstance as one of several that has induced this belief. During a mid-winter blustering night the thermometer sank to 12° below zero, and, in spite of all the efforts of himself and men, thousands of plants in the greenhouse were more or less frozen. The following day one of the houses was well shaded and the plants treated to cold water. The other houses were not shaded and the plants were not watered, with the result that more plants were destroyed in the former than in the latter.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Succulents at Regent's Park.—Mr. J. T. Peacock has forwarded to the Royal Botanic Gardens, Regent's Park, a choice collection of Agaves, Aloes, Cacti, and other succulent plants, which will remain there as a permanent exhibition. They are now in progress of arrangement in the new wing, which is to be opened by the Duke of Teck, on the 1st of June next.

Removing Camellias.—I have some Camellias that have been planted out about two years, and which I want to remove about 60 miles by train; would the present be a proper time for the operation?—Manchester. [It is a little too late; Camellias move best just when they have ceased blooming, and before they have begun to make new growth.]

Succulents in Flower.—The following are now in good condition at Sudbury House, Hammersmith, viz., Echinocactus concinnus, Williamsii, anfractuosus, submammulosus, turbinatus, lophothele, and hexædrophorus; Mammillaria uberiformis, cirrhifera, recurva, Peacockii, Roezliana, glochidiata, viridis, formosa, Wildiana, pusilla, stellaris, and Fischeri; Cereus tuberosus, Mallesonii, leptopes, flagelliformis, and speciosissimus; together with variôus Phyllocacti, Gasterias, and Haworthias.—J. Croucher.

The Scarlet Windflower (Anemone fulgens).—This makes an effective pot plant—that is, if several roots be placed in a good-sized pot. The foliage is stout and handsome, and the flowers, which are intensely scarlet, rise well above it. Exhibitors of hardy flowers in pots should look after this Anemone, because it possesses a richness of colour that is by no means common amongst hardy plants. Its time of blooming may also be regulated by the time when the roots are planted, and whether they are kept under glass, or placed in the open air. As a border plant it only needs to be known to be generally cultivated. —D.

Common Toadflax (Linaria Cymbalaria) as a Window Plant.—If a graceful trailing plant be required for a hanging basket or bracket pot inside a sitting-room window, I know of none better than this; for, in addition to slender pendent growths, clothed with a small dark-green Ivy-like foliage, it bears pretty little Snapdragon-like rosy purple flowers in the axils of the leaves, and it is fresh-looking and pretty during the summer and winter, if plentifully supplied with water. It grows best in turfy loam, intermixed with lumps of sandstone grit, and more luxuriantly in a shady window than in a sunny one.—B.

ENGLISH FLOWER GARDENS.

Fashion, which exacts such frequent changes in all that relates to our social life—in our dress, in our domestic architecture, even in the time and place of our holidays, and in other such matters—is singularly constant in respect of our flower gardens. For more than forty years we have hardly moved. About that time ago it was that fashion decreed that an Englishman's pleasure-garden should only be bright for three months in the year. His trim Box and Yew hedges had long before been voted out of date and cut down; his topiarian triumphs, his urns, and his peacocks and his monkeys quaintly carved out of Evergreen trees, had been laughed at; his old English flowers, his Canterbury Bells, Sweet Williams, and Columbines; his Pansies and Gillyflowers, whose very names are sweet and racy of old English song and story, were rooted up and cast away. When the ground was clear, and the gravel paths had been neatly turfed over, on the level expanse of green were cut beds of singularly inartistic shape, square, circular, oblong, trefoil, slug-shaped, and caterpillar-shaped, arranged in more or less of symmetrical order. Into these unlovely receptacles, when the frosts of spring were over—that is, in the middle of May—a greenhouse full of Geraniums, Calceolarias, Cinerarias, Lobelias, Heliotropes, Fuchsias, and Verbenas of various shades of colour, were hastily stuffed, there to make the best fight they could against our inclement climate. If all went well, if the east wind were not too much for them, or the rains excessive, the plants got into fair blossom in about six weeks, and into full bloom in a fortnight more. In a month afterwards, there was the beginning of the end; the less persistent bloomers were going off, the Heliotropes often were cut down by the frosts of September, and by the middle of October the garden was a wreck. From that time till the May following, that is, for a whole seven months, there was no garden at all, only the bare earth of the beds —the places where the flowers "were not."

The innovation which I have above described in the past tense most faithfully represents the present state of the garden system of ninety-nine English country houses out of a hundred. All that we have done to enlarge its narrow bounds has been the weak attempt to introduce the so-called sub-tropical gardening, which is often little more than a development of the same system of wintering tender plants under glass, and planting them out for the short summer; and then again we have invented the more successful and effective foliage-plant gardening, the use, that is, of Coleus, Pyrethrums, and others; this, of course, also requiring the use of the greenhouse during the cold months, and being only a further development of the same artificial mode of plant culture. I seriously urge that this prevailing style of garden is wrong in principle, very uninteresting, quite inartistic, and as compared with the effect produced, extremely expensive. Wrong in principle, because, while the object of a garden is to give us constant pleasure, to be what the poet says a thing of beauty is, "a joy for ever," the modern English garden, assuming (which I deny) that it is a "thing of beauty," is a "joy" for hardly three months out of twelve. Wrong in principle, because, when summer is with us, and every bank and hedgerow are delightful with green plant-growth and gay blossom, and we could best dispense with a garden, then only it is that we have one. In the dull winter and early spring months, "when fields are mire and ways are foul," when we can often not go into the lanes, and by the meadows; when we want to be cheered by the pleasant sight of well-filled flower-beds, our garden with its damp and spongy turf, and its empty beds, bare and naked as newly-made graves, is about as inspiriting a sight as a London churchyard. Wrong in principle, because the original object of making the garden gay in autumn, was, that its owners, coming from their summer sojourn in London, should enjoy, on their return, the bloom of their flowers, without having assisted at their struggles into luxuriance. But apart from the fact that not one country family in ten who have gardens spends the season in town—apart from this, our habits have changed. Most of us now pass these very two or three months at the seaside, or abroad, or in visits to country houses, and often never see a Verbena or a Geranium of our own in perfect flower.

The result of such gardening is inartistic, because, while the beauty of flowering plants is threefold—their colour, their form, and their variety—their colour alone is utilized in our English system. The only object of the gardener is to get together as many masses of bright colour as he can; he pegs his plants down to cover the ground, and is melancholy if a single patch of bare earth be visible. The plants are too much crowded for their form to be seen to advantage; and as to variety of growth in leaf, branch, and flower, as to all the matchless and cunning redundancy of Nature's handiwork, all this is lost. There can be none of this variety in our gardens, because the list of so-called "bedding-out plants," that is, those which will admit of being planted out in

May, and that will grow vigorously and flower freely, is limited; it hardly comprises a dozen species. Moreover, to harmonise the few garish colours employed on a green expanse of turf, is a task from which even a good artist might shrink. The gardener seldom dreams that there is such a thing as colour-harmony, or that a bright yellow Calceolaria near some tender blue flower, a scarlet and a pink Geranium close together, an orange Gazanea, and a blue Lobelia in close propinquity, are not quite lovely combinations of hues. It will take very little eloquence to persuade owners of gardens thus maintained that the expense of them is very great. Greenhouses are not built, warmed, and kept in repair for nothing. To carry out the "bedding-out" system with any sort of completeness and success, demands skilled labour of no light kind. A modern English gardener requires an education which is nothing less than scientific, and, as every one knows, his salary in large establishments is higher than that of many professional men. In mere material—seeds, flower-pots, tools, garden-engines, tobacco for fumigation, and new plants—the cost is considerable; and all this to produce a result which is ludicrously disproportioned to the outlay. The English and, worse still, the Scotch climate, is certainly not such as a man would choose for gardening in; but a bad climate has something to do with the making of a good gardener—it forces him to fight it. The English gardener has a high repute all over Europe; the Scotch gardener is confessedly the best in the world. The worse our climate the more need indeed have we for pleasant gardens; the duller our winters, the chillier our springs, the shorter our summers, the more occasion have we to refresh our eyes with the gay colouring of flowers, to catch the sunshine on south walls, to rear lofty bulwarks of greenery against the sharp north winds, and to prolong the summer blossoms of our flowers. There are immense difficulties in the way of doing all this, but it is not for Englishmen to shrink from them. It is not for us, because "it is hard to conquer" these obstacles, to consent to shirk them—to say "the English climate is so absolutely insufferable that we only condescend to expose our flowers to it for four or five months; the rest of the year they must be boxed up in a glass house." The time was when our gardens were perennial, like the plants that filled them, when every season had its growth and its interest, its bloom and its attraction.

Elizabethan Gardens.

Let us see how a garden was regarded at that period of our history, when English wits and English taste were confessedly at their brightest and best; let us see what sort of a thing an English garden was in the generation in which Elizabeth reigned and Shakespeare wrote. Here is a description of one by a man who was considered the foremost statesman, the greatest lawyer of his century, one of the most perfect of courtiers and the wittiest man of his day, and whom posterity has recognized as the chief of England philosophers. Here is Lord Bacon's idea of what a garden should be:—"God *Almighty* first planted a *garden*; and indeed, it is the purest of humane pleasures. It is the greatest refreshment to the spirits of man; without which, *buildings* and *pallaces* are but grosse handy-works: and a man shall ever see, that when ages grow to civility and elegancie, men come to *build stately*, sooner than to *garden finely*, as if *gardening* were the greater perfection. I doe hold it, that in the royall ordering of *gardens*, there ought to be *gardens* for all the *moneths* in the yeare: in which, severally, things of beautie may be then in season. For *December* and *January*, and the latter part of *November*, you must take such things as are greene all winter: holly, ivy, bayes, juniper, cipresse-trees, eugh, pine-apple-trees, firre-trees, rosemary, lavander, periwinckle, the white, the purple, and the blewe: germander, flagges, orenge-trees, limon-trees, and mirtles, if they be stooved, and sweet mariorum warme set. There followeth, for the latter part of *January* and *February*, the mezerion tree, which then blossomes; crocus vernus, both the yellow and the gray; primeroses, anemones, the early tulippa, hiacynthus orientalis, chamaïris, frettellaria. For *March* their come violets, specially the single blew, which are the earliest; the yellow daffadill, the dasie, the almond-tree in blossome, the peach tree in blossome, the cornelian-tree in blossome, sweet-briar. In *Aprill* follow the double white violet, the wall-flower, the stock-gillyflower, the cowslip, flower-delices, the lillies of all natures; rosemary flowers, the tulippa, the double piony, the pale daffadill, the French honny-succle, the cherry-tree in blossome, the dammasin and plum-trees in blossome, the white thorn in leafe, the lelacke tree. In *May* and *June* come pincks of all sorts, specially the blush pincke; roses of all kinds, excepte the muske, which comes later; honny-succles, strawberries, buglosse, columbine, the French mary-gold, flos Africanus, cherry tree in fruit, ribes figges in fruit, raspes, vine-flowers, lavander in flowers, the sweet satyrian, with the white flower; herba muscaria, lilium convallium, the apple tree in blossome. In *July* come gillyflowers of all varieties, muske roses, the lime-tree in blossome, early peares and plummes in fruit, ginnitings, quadlings. In *August* come plummes of all sorts in fruit, peares apricockes, berberies, filberds, muske melons, monks hoods of all colours. In *September* come grapes, apples, popies of all colours, peaches, melo-cotones, nectarines, cornelians, wardens, quinces. In *October* and the beginning of *November* come services, medlars, bullises, roses cut or removed to come late, hollyhokes, and such like. These particulars are for the *Climate of London*, but my meaning is perceived that you may have *Ver Perpetuum*, as the place affords."

The gardener of to-day may well smile at the enumeration of some of these "Things of Beautie;" the "Figges in fruit" would hardly fit into any modern system of flower gardening, but Bacon was as large-minded in his gardening as he was in his philosophy, and would have his garden to contain every fruit and flower that serves for man's use and pleasure and refreshment. His garden would cover, he says, not less than "*Thirty acres of ground*," and be divided into three parts: a *greene* in the entrance, a *heath* or *desart* in the going forth; and the *maine garden* in the midst; besides *alleys* on both sides. And I like well that four acres of ground be assigned to the *greene*, six to the *heath*, foure and foure to either side, and twelve to the *maine garden*. The greene hath two pleasures: the one, because nothing is more pleasant to the eye than greene grasse kept finely shorne; the other, because it will give you a faire alley in the midst, by which you may go in front upon a *stately hedge* which is to enclose the *garden*. But because the alley will be long and in great heat of the yeare, or day, you ought not to buy the shade in the *garden*, by going in the sunne thorow the greene, therefore you are, of either *side* the greene, to plant a *covert alley* upon Carpenter's work, about 12 ft. in height, by which you may goe in shade, into the *garden*." A garden was thus to be a place where a man could take his pleasure, not a piece of decoration to be taken in by the eye at a glance, and then to have no further interest. He would have no meretricious appeal to the sense of sight, and, oddly enough, he anticipated the most rational of the objections which have been made to the system of the great French gardener, Le Nôtre, who flourished under Louis XIV., and whose leading notion was a tracery of various complicated designs in Box, in stone, and in coloured sands, on the surface of the ground. "As for the making," says Lord Bacon, "of *knots*, or *figures*, with *divers coloured earths*, that they may lie under the windowes of the house, on that side which the *garden* stands, they be but toyes; you may see as good sights many times in tarts. Indeed, he would by no means appeal to the eye alone in his ideal garden. I know in all the multifarious writings on gardening nothing that betokens so intense a love of flowers, and so intimate a knowledge of them, as the following passage:—"And because the *breath* of *flowers* is farre sweeter in the aire (where it comes and goes like the warbling of musick) then in the hand, therefore nothing is more fit for that delight, then to know, what be the *flowers* and *glants* that doe best perfume the aire. Roses, damask and red, are fast flowers of their smelles, so that you may walke by a whole row of them, and finde nothing of their sweetnesse; yea, though it be a morning's dewe. Bayes likewise yield no smell as they grow; rosemary little; nor sweet mariorum. That, which above all others yeelds the *sweetest smell* in the *aire* is the violet; especially the white-double-violet, which comes twice a yeare; about the middle of *Aprill*, and about *Bartholomew-tide*. Next to that is the muske rose; then the strawberry leaves dying with a most excellent cordiall smell; then the flower of the vines—it is a little dust, like the dust of a bent, which growes upon the cluster, in the first coming forth. Then sweet briar, then wall-flowers, which are very delightfull, to be set under a parler, or lower chamber window. Then pincks and gillyflowers, specially the matted pinck and clove gillyflowers. Then the flowers of the lime-tree. Then the honeysuckles, so they be somewhat a farre off. Of beane-flowers I speak not, because they are field flowers. But those which *perfume* the aire most delightfully, not *passed by* as the rest, but being *trodden upon* and *crushed*, are three: that is, burnet, wilde-time, and water-mints. Therefore you are to set whole alleys of them, to have the pleasure, when you walk or tread."

I have not space to quote more of this delightful essay to show how "the garden is best to be square; incompassed on all the foure sides with a *stately arched hedge*,"—how "*fountaines* are a great beauty, and refreshment; but *pooles* marre all, and make the *garden* unwholesome,"—how the heath is to be a natural wilderness, the side grounds filled with a "*varietie of alleys*" to give shade, and "for shelter when the wind blows sharpe;"—but I have given enough to show the general idea of Lord Bacon's garden, and to let the reader see from how poor a catalogue of plants this grand garden was to be furnished. Since those days of the "early tulippa," and "sweet satyrian with the white flower," we have certainly made great and numerous acquisitions of flowers that will open bravely to our suns; and great blame is due to us if, having them, we fail of doing what Englishmen succeeded in achieving three hundred years ago. From the reign of Elizabeth to the middle of the last century, the fashion of our English gardens was copied from the Italians, who loved and still love fountains, terraces, low balustraded walls, broad stone-paved paths, beds filled mostly with flowering shrubs, " stately alleys," embowered retreats, and great walls of close-clipped Hornbeam, Box, and Yew; adorning this pleasance with statues, and with architectural decoration of temples, alcoves, and porticoes; now we would copy from the French, whose style of gardening is all this stiffened and formalised, and without the Italian richness of line and breadth of lights and shadows; or again, from the Dutch, who cut and torture their evergreens into quaint shapes of men, monkeys, peacocks, and elephants—who love straight lines and rectangular paths and flower-beds, and replace fountains with fish-ponds, and terraces with stagnant canals. All these varieties of gardens found their admirers and imitators in England, but it was not until the period when philosophers of the emotional kind, like Jean Jacques Rousseau, were beginning to discover that all formal laws were a mistake, that Nature was the best guide in everything, from ethics to the nursing of babies, it was not till this period that some of our English writers began to apply these great principles to gardening, and to discover that we had all along been constructing our gardens in a radically unphilosophical manner; that we had been appealing to art, and that we must now appeal to Nature.

A More Natural Style of Gardening.

The new school of philosophers cast aside all tradition and all law as alike false, artificial, and oppressive; and the new school of gardeners followed suit. A straight line was a line drawn by a slave, a flower-bed with two sides that corresponded was an utterly base and unworthy thing. The disciples of the new philosophy were bidden to seek out Nature, to consult her, to watch her various moods, to copy her effects, to reproduce her smoothness in their lawns, her ruggedness in their mock rockworks, her picturesque and sinuous curves in their flower-beds and walks; to mass their Laurels and Rose bushes as she massed her trees in the primæval forests where the desecrating hand of man had never been laid; to mark how she grouped the eternal hills, and to arrange their flower-pots in the same tumultuous disorder. These fine principles resulted in what is sometimes called the " picturesque," and sometimes (offensively enough) the " gardenesque " style of landscape gardening. Abroad it was known as the " English style," and its leading idea falling in with the prevailing fashion for unsophisticated nature, it quickly found many admirers and adopters. The high priests of the new religion in England were Lancelot Brown and Sir Uvedale Price, a Herefordshire country gentleman, who wrote a book and carried the principles contained in it into forcible execution whenever he could. He was a true enthusiast in the matter, and no doubt as tedious to his friends as most enthusiasts. When he was elected High Sheriff of his county, it was spitefully said, " Price will want to group his javelin men ! " But Sir Uvedale was a scholar and a man of some latent taste, and he lived to deplore the excess of his zeal. The other famous " naturalist " was Brown, known as " Capability Brown," who treated the face of Nature as a painter does his canvas. His idea was to get the land to be like the picture of some fashionable landscape painter. He sat down at a " point of view," and recomposed the landscape; felling an old Oak tree here, planting a group of tall Poplars there, raising a hillock in the middle distance or levelling an inequality in the foreground, carrying the waters of a horse-pond into a hole in the middle of the lawn, because Claude or Poussin had a pond in the corner of a particular picture, cutting down a wood and letting in the east wind, to make a " vista," and otherwise deforming the sweet face of the country side. At this day very few people believe in the " noble savage " theory and the " religion of sentiment," but the school of gardening which was founded on the development of these grand theories still flourishes. It is, on the whole, the prevailing style in which English gardens are laid out to this day.

Gardens in naturally Picturesque Localities.

I can recall many gardens and garden grounds in naturally picturesque localities, where advantage has been taken of wood, rock, lake, or ravine, with most admirable results. One such garden in the Highlands of Scotland is particularly in my recollection. Here a path winds along the side of a precipitous rocky bank overhanging the mountain stream below. The gardens follow the path; now a narrow rim of bright flowers, as the rocks close down upon the pathway, now broadening into a border with flowering shrubs, now opening out into a level bit of garden plot, and diversified at each step of the way by the ever-changing views of rock scenery, Pine forest, and waterfall. In another garden in Ireland, where a broad lake is within a stone's throw of the house, the islands lying thick on its surface are connected with the shore and with each other by light wooden bridges, and are all laid out in garden beds, with their rich green turf intersected by paths of shining white gravel. A third such garden I can recall—the most beautiful of all—in a foreign country where most of our common greenhouse plants grow in the open air. Here also the ground is rocky and intersected by deep ravines. The broad walls are covered over with trellis-work, which holds up a matted growth of Roses, the tea-scented Adam Rose and the Cloth of Gold Noisette being predominant; Bignonias, the Plumbago capensis, and several species of Bougainvillea, Passion-flowers, and Tacsonias. On the sun-exposed rocky ground, the Scarlet Geranium and the Prickly Pear mingle curiously; and Fuchsias, Heliotropes, and various species of red and yellow Hibiscus, the Poinsettia, and other such plants, grow into large and free-flowering shrubs. The watercourse below is mantled with a thick growth of Arundo donax, the great spear-like Reed of warm climates, and the broad-leaved Caladium. In such situations as these it would be a desecration of Nature to level the ground, to build walled terraces, or to make rectangular paths; but in a country where the surrounding scenery is without attraction in itself, where it is barren and yet not picturesque, or, on the other hand, highly cultivated and tame, or where the space is limited and shut in by walls or houses—there the eye rests delightedly on the rich luxuriance of a cunningly devised design in the Italian style, on terraced walks, arcades, fountains, quaint sundials, and balustrades of grey Lichen and Moss-covered stone, on broad expanses of smooth gravel, separated by rims of moulded stonework from the deep velvet of the turf; and all this contrasts again with the still deeper green of the clipped Yew hedges, against which the marble statues show white and glistening, and the drops from the water jets sparkle like diamonds. What a setting is such a garden as this for flowers! How their rich hues come out doubly rich, and their colour-harmonies doubly tender and doubly harmonious! This is gardening for millionaires. The work must be the best of its kind; not necessarily elaborated or highly finished, but true art-work, with the hand and mind of a master visible everywhere. Men of modest means must be careful how they try to make a sham garden in this style, with painted plaster casts for marble statues, and instead of rich marble or stone balustrades, a pitiful imitation in painted wood, with rubble walls cement-covered to make them look like stone, and similar abominations.

Imitations of Nature Condemned.

This brings me to the enunciation of another important canon in gardening art—a rule which if the reader apply to other things than gardening, he will be none the worse a man. Nothing about a garden should pretend to be what it is not. The strict application of this rule will, of course, give the death-blow to artificial rockeries, or rooteries, to those abominations of imitation in common use—iron half-hoops for path edging made to look like bent sticks, to imitation ruins, and to all the various shams we have indicated above. If with a due observance of this rule a man choose to practise economy, if he make judicious use of the materials accessible to him, never attempting to pass a thing off for that which it is not, never trying to paint a brick to look like a stone, or a bit of iron-work like a stick, he may still produce admirable results. For a moulded stone edging worked by the chisel he may substitute square tiles of a light colour set edgewise [an abomination !—ED. GARDEN]; his terrace wall may be of dark red brick, unpointed, and he may with perfect propriety promote the growth of Lichen and Moss upon it by occasional watering with muddy water. Such a wall, so treated, loses its " stariness " in a year, and in a decade is a lovely object. On its top, in lieu of balustrade or open work, he may set three or five rows of roofing tiles transversely, the hollow side down, and the rich effect of pierced work is obtained at once and quite legitimately. Instead of using stone or marble vases, he may plant his clipped Laurels in wooden tubs, as the gardeners at the Tuileries and the Luxembourg used to do with their Orange trees; and a Portugal Laurel so treated—barring flower, scent, and fruit—is nearly as ornamental as an Orange tree. [Why put a tree in a tub which may be grown much better planted in the ground?—ED.] Statues he must, of course, not think of, nor indeed do they well become any garden but a very grand one. Moreover, a second-rate statue is a painful object, and it is perhaps in questionable taste to employ statues at all in this climate. An undraped marble figure in a March wind is a shivery object, and our summers are perhaps not long or hot enough, nor on the whole are our æsthetic developments sufficiently pronounced, to allow us really to enjoy the sight of the heathen gods and goddesses,

All standing naked in the open air.

But if our climate make statues in doubtful taste, there are other quite legitimate non-floral adornments. Sun-dials are, it appears to me, the most fitting and charming ornaments that a garden can possess. In our dull climate particularly, when the sun will not show for days, the dial in our garden seems to be a constant reminder to us of bright weather, to be a standing protest against dull cloudy skies, and an appeal for sunny days. With their curious tracery of cabalistic line and "Zodiac sign," and their quaint Latin mottoes, the ancient dials in Dutch and French gardens are delightful objects, often true works of art. Their legends—"Horas non numero nisi serenas," bidding us forget the dark hours of life; and "Vera loqui aut tacere," Truth or silence—are full of most wholesome rustic moralising and suggestiveness.

I have hitherto said a good deal about the garden itself and very little about the plants which are to grow in it. The reader will have gathered that the present writer's opinion is that the flowers should have the rich setting of an Italian garden, and this whether the "bedding out" system be adopted, or the natural system of having flowers all the year round, or a compromise between the two. Of the "bedding out" system I mean to say nothing; so exhaustively is the subject treated in contemporary garden literature that it would be difficult to edge in a new idea. I am quite against the system, I have said why, and I now leave it alone. In the compromise between the two systems which I advocate, "bedding out," in the limited sense of taking a plant from a greenhouse in May and putting it into a garden bed, would have no place, the beds would already be full. But assuming that a certain amount of skilled labour and a certain amount of greenhouse space are available for flower garden purposes, I should propose to utilise them in a way which I shall presently proceed to explain. Our garden would be perennial; and we must first take stock of our floral possessions. When we come to compare our list of available hardy flowering plants and shrubs with the curiously restricted catalogue at the disposal of the gardener in the sixteenth century, it will be seen that we are positively embarrassed by our wealth. Even Lord Bacon's list is largely made up of importations from abroad; and since then the four quarters of the globe have been ransacked for hardy as well as for greenhouse plants.

The gardening of every nation should, and indeed must, be made subservient to its own circumstances and surroundings. An English garden, with its absence of shade amd its turf-set flower-beds, would be dried up and baked the colour of toast in a week under the sun of Spain or Italy; and such gardens as dwellers under southern skies enjoy would speedily become the habitation of the newt and frog, if transferred to northern climes. In Russia, open air gardening is only a very sorry makeshift, and the "poor frozen-out gardeners" of the North have to conduct most of their operations under glass; and on a very magnificent scale they do it, enclosing under a huge glazed dome a whole garden plot, with its parterres, walks, arbours, and fountains. This sort of thing has of late years been much recommended for us, but we have not quite come to that yet, and gardening, to keep the hold it has on the likings of English men and women, must continue to be an out-of-door occupation.

The fashion in gardens in Southern Europe has always been for shade and for coolness. Here is a short description of a garden, written some two thousand years ago, which I translate:—

> In thick-leaved Elms the breeze is whispering;
> The cooling waters of a sacred spring
> Drip from their rocky source, and from near by
> The thrushes sing and the cicadas cry.

This is a perfect picture of the only sort of garden which is enjoyable in a hot climate: the shade, the light breeze, the cool splash of water, the pleasant sounds of Nature. Such are the gardens of Greece, Turkey, Southern Italy, and Egypt. The ideal of an Arabian garden is a dense shade of Plane and other broad-leaved trees; and so thick are their groves of sweet-scented shrubs that a garden is rather a wood than the open space which we make our garden pleasances. Here water is for ever heard dropping into marble basins, and the moist air is heavy and faint with the sweetness of Orange flowers and Musk, Roses and Jasmines. This somewhat exaggerated liking of the Arabs for excessive shade and moisture was, I suspect, carried to whatever lands in Europe and Africa their civilization reached. In Morocco, in Spain, and in Sicily, this Arab or Moorish type of gardening is still found. In the Peninsula a proverb runs, "a garden without water, a house without a roof, and marriage without love, are all bad things;" and first, it will be seen, on the black list is put the waterless garden. In the suburbs of a certain ancient city of Spain there is an old Moorish garden of this sort—a most enchanting spot. Coming from the dusty street without a single step brings one into a fresh cool atmosphere that might have given its former Moorish owner a foretaste of his Moslem paradise. Among other modes of bringing the freshness of the water to the senses, among various ways of multiplying its sound and sight, among devices for causing threads of water to fall from a height into brimming fountains and water-spray to glance in the light, was one which the writer had seen nowhere else. A broad flight of marble steps leads from the upper to the lower part of the garden, and the balustrade on either side of these steps is topped by flat slabs of marble, along which a narrow channel is cut, and down this there constantly flows a tiny runnel of clear water; at each landing-place and at the bottom of the stairs an earthenware jar is let into the marble, and the water flows into and out of it with a spiral whirl and a gurgling sound. The notion may seem a fanciful one to us at home, where the splashing of the rain-drops and the gurgle of water is no variety, and one requires to be a little baked and dusted in a country where the rain often holds off for five months, before one can appreciate the pleasure of dipping one's fingers into running water as one walks up and down stairs. Charming as these Moorish gardens are they would of course, be stupid enough in this country, and we Englishmen have exceptional difficulties to contend against. In the south there is the dry, sun-baked air to cool and moisten; in the north, the obstacles to gardening are snow, ice, and excessive cold. We have both extremes to fight against—heat in summer, cold in winter, in addition rain and cloudy skies at all seasons. Beyond all doubt, therefore, our task is a harder one than that of gardeners in the ice-bound north or in the sunny south. We cannot make our gardens one huge green-house, like the Russians, nor one mass of shade, like the people of Southern Europe. If, then, we abandon our present garden system—and there are signs and tokens of such abandonment—to what shall we betake ourselves?

It is essentially a question of taste and of custom. As our national taste enlarges, and as it gets educated into real culture, so I believe shall we get to be dissatisfied with a garden system which, though it has pleased us during nearly two generations, is, nevertheless, thoroughly narrow and thoroughly un-English; but there is a far more serious aspect to the question than that of good or bad taste. A garden is more than a mere recreation—"a refreshment to the spirits," as Bacon calls it; it is an important means of health. A garden swept by the cold sleety winds of winter and spring, dank and spongy underfoot, tempts us forth indeed in ungenial weather, but it tempts us to our destruction. It is thus that the seeds of fatal disorders are sown—it is thus that colds and chills and sore throats begin, with all their long and often fatal sequences.

It is the opinion of the present writer that we are on the eve of a great reform in gardening. Social revolutions come about, as a rule, not because sensible people see and expose the defects of the existing order of things, but because conventional people get in time tired of their own conventionality, and sigh for a change. A garden system which costs a great deal, which makes a short, garish, and vulgar show, an imposture which satisfies no artistic taste, cannot hold its own in the England of to-day, where a sound æstheticism is gaining a certain hold upon all classes, and where shams are happily getting every day to be thought more and more ridiculous and degrading. I therefore confidently predict that a new order of gardening is at hand, and that the established English garden will soon be a thing of the past.

[We reprint the above portions of an essay on English flower gardens from "Country House Essays," by Mr. John Latouche, because while interesting in various ways, it is also more than usually free from the ignorance of our art so often displayed by writers on horticulture in the Reviews. It, however, is not free from the common error, expressed in an offensive manner, that all gardeners hate hardy plants. Thus, in speaking of the Christmas Rose, we are told that it is "no doubt, despicable enough in a professional gardener's eye." This kind of talk is untrue and very unjust, for it is to gardeners—and the best gardeners—that we owe the preservation of our collections of hardy flowers through the years of neglect from which they have of late been emerging. When in nearly every private garden in the land orders to adopt bedding-out in all its severity were given, and the old flowers were consigned to the rubbish-heap without a protest, who saved our precious collections of hardy flowers? Why, mainly nurserymen, independent enough to have their own way in spite of fashion—the Backhouses, Hendersons, Osborns, Lawsons, Wheelers, and the botanic gardeners like Moore, McNab, Niven, Bain, and others. Saturday Reviewers and all other writers are quite welcome to fill their pages with abuse of bad gardening and bad gardeners, but a wholesale abuse of gardeners is most foolish. Mr. Latouche, in a passage we have not printed, holds the Italians to be masters in the art of garden design, and that the example they have set us is best to follow. Having gone through Italy from north to south, with a view of seeing what Italian gardens were worth following, we cannot agree with him on these points. The Italians made such gardens as great artists and architects might be expected to make on hilly ground. Their style is the worst and most costly that could be adopted for the mostly level gardens of England. The men who formed the style adopted it, like clear-headed creatures, to the places where they lived and worked. Mr. Latouche has also an original notion as to the substitution of glazed covered ways "along sunny southern walls," with "movable shutters" in front, "thick canvas," &c., all of which seems to us no improvement on a good airy orchard house, Camellia house, cool conservatory, or covered way—though some may prefer his way. On one point, however, we think he will have very little support, and that is, the substitution of broad paved or graveled pathways for "spongy turf." Gardens are certainly not now deficient in graveled pathways, and he is no friend to the garden who would remove a yard of turf for a yard of pavement. Convenient and well-drained walks we must have, of course; but the needless "cutting up" of our beautiful carpets of turf all garden lovers should protest against. With these remarks, we welcome Mr. Latouche as an advocate of progress in the art of gardening.—Ed. Garden.]

The White Butterwort (Pinguicula alpina).—This is now a charming plant on our rock-work, its clear, white, compact blossoms contrasting beautifully with the dark shady rocks, in the fissures of which it grows. For years we have lost many of this species every winter, the few survivors leading us to believe that it was the most difficult of the genus to cultivate. Now we think it the easiest. The fault lay in our ignorance, not in its constitutional unfitness for our climate. P. alpina, unlike its allies, has strong, deep-rooting, branching, brownish, fibrous roots, which fix themselves tenaciously among smashed granite, or other hard stones, mingled with a very little peat and sand (three-fourths stone). Grown in this way it thrives most vigorously, even in pots, shaded from the sun and in a rather humid position.—J. Backhouse, *York*.

Ornamental Hedges.—In a recent number of The Garden one of your correspondents mentions (see p. 461) a hedge which was made of wild Roses, Clematises, &c. I am anxious to make an ornamental fence to part off my garden, and the hedge mentioned by your correspondent seemed to me to be just what I want, especially if a few bushes of cluster Roses, Gloire de Dijon, &c., were added, but I fear that the wild Rose (or Brier) would grow too much in height and not be sufficiently dense to make a good hedge. If, therefore, any of your correspondents could help me by their advice in reference to this matter I should be most grateful. The ground is open, and has lately been pasture land, and the soil is a good dark loam.—Ralph Walker, *Ellerslie, Leicester*.

New Ivy-leaved Pelargoniums.—Some new Ivy-leaved Pelargoniums, which have been raised by Mr. George, of Putney, have (says the "Florist") passed into the hands of Messrs. E. G. Henderson & Son for distribution. They are of free and vigorous growth, and have bold trusses of large, well-formed flowers. Their names are—Camballo, rich lilac, tinted with rose, and carmine lines on the upper petals; excellent in form, the petals overlying each other. Duchess of Edinburgh, elegant blush-white, with violet and rose twin streaks on the upper petals, and a rosy-pink blotch. Miss Blanche, soft, delicate lilac, with violet-purple streaks on the top petals; this has a neat, well-branched, dwarf habit of growth. Nemesis, clear carmine, deepening into magenta, and shaded with crimson, the upper petals pencilled with violet; flowers of fine form, and very effective. St. George, deep lilac, shaded with carmine; this is a free, vigorous habit of growth. Now that hanging baskets are so much employed in conservatories, these Ivy-leaved Pelargoniums will be found very useful.

Spot in Peach Leaves.—I should be glad if any one could tell me the cause of "spot" on the leaves of Peach trees. It does not seem to affect young leaves so much as older ones, and I find more of it on the leaf-stalk or petiole than on the blade. At first the spots are very small, but they gradually increase until they get nearly as large as a threepenny piece, when the leaf falls. At first I thought (and still think) that the roots must be at fault, but yet I see nothing wrong with them, neither has the soil been kept too wet. I have likewise suspended syringing except during sunny days, when it was done early in the morning and again towards three o'clock in the afternoon. It is only a tree here and there that is affected, others growing side by side with them and treated in the same way being perfectly healthy.—G. H.

Rust on Grapes.—"G. H. G.'s" case (see p. 485) must be an exception, as I never knew nor ever heard of rust attacking Grapes during their second swelling. In an early stage, the tissue of the skin is so tender that rust is very easily induced in many ways; cold draughts, over-heating the hot-water pipes, and allowing water to come in contact with the berries, all cause rust on the fruit, and also warts on the leaves; or sulphur, if not thoroughly cleaned off the previous year, will produce the same result: but nothing of a slight character will affect the skin of Grapes so far advanced in growth as those referred to in "G. H. G.'s" case; when the skin has become tough and leathery nothing but extremes can have any effect on it. "G. H. G." cannot, I think, have closely inspected his Grapes in their young state, or he would have discovered the mischief of which he complains earlier.—James Smith, *Waterdale*.

—— My conviction is that rust in Grapes is caused nine times out of ten by the overheating of pipes that have been sulphured; but why sulphur them? As a remedy for the destruction or prevention of spiders sulphur has proved to be a signal failure, and though many assert that they have found it of benefit, I as conscientiously assert after long experience that it is worthless, and that long custom alone sanctions its use. The best remedy for spider is to keep the atmosphere, during the earlier stages of growth, moist, and continually charged with ammonia, either by means of a thin layer of stable litter (occasionally renewed) on the floor of the house, or by sprinkling the floor and walk with manure-water, or, better still, painting the pipes with guano in the same way in which sulphur is used.—W. Wildsmith, *Heckfield*.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE FLOWER SHOW.

May 19 & 20.

Among subjects of more than ordinary interest shown on this occasion may be mentioned the beautiful groups of pot Roses, furnished by Messrs. Paul and Son, of Cheshunt, and Mr. C. Turner, of Slough, and as if to demonstrate that really well-grown and well-arranged groups of stove and greenhouse plants are not quite things of the past, Messrs. Jackson, of Kingston, produced superb collections of both classes of these plants. Orchids were represented by well-grown collections from Mr. B. S. Williams and Mr. J. Ward, making this show altogether one of the most successful of the season, all the classes being remarkably well filled.

First Class Certificates.—These were awarded to the following new and rare plants, and florists' flowers:—

Pelargonium Zonale, Exquisite (J. Laing).—This is one of the most striking of all the bronze Zonal varieties, the ground colour of the leaf being a soft yellow, with a well-defined crenate margin, and a broad and distinct reddish-bronze zone. It promises to be useful, both for pot culture and for out-of-doors.

Pelargonium Zonale, John Jenner Weir (J. Laing).—A dwarf and distinct variety, belonging to the bronze zonal section, and, like the last, of robust habit, with a well-marked reddish-brown broad zone, on a soft yellow ground.

Pelargonium Zonale, Purite (J. Laing).—This is a double-flowered variety in the way of La Cigne, and appears to bloom quite as freely.

Caladium, Madame de la Deransaye (J. Laing).—This somewhat resembles the well-known C. Chantinii, but is far more beautiful, the petioles of the creamy hastate leaves, and the principal veins being of a clear, rosy, pink colour. It is a very effective variety, and well worth culture.

Viola hybrida, Jupiter Black (H. Hooper, Bath).—A well-shaped and very dark—almost black—variety, of rich velvety appearance, which will be much thought of by Pansy growers.

The following, all of which have already been described in our columns, also received certificates, viz.—

Croton Disraelii (B. S. Williams).
Woodwardia radicans cristata (B. S. Williams).
Bertolonia Van Houttei (B. S. Williams).
Polystichum lepidocaulon (B. S. Williams).
Bertolonia Van Houttei (J. Wills).
H. P. Rose Star of Waltham (William Paul and Son).
Pelargonium Zonale, Wonderful (G. Smith).

Orchids.—These were well represented, the individual plants being in most cases large and well grown. Among Dendrobes we remarked several floriferous examples of D. Falconeri, a fine species, which growers seem lately to have learned how to grow and bloom successfully, succeeds perfectly in a warm greenhouse temperature. Other Dendrobes consisted of D. Devonianum, a charming species with elegant lilac and white flowers, having a fringed lip; D. tortile roseum, a variety with curiously twisted lilac-tinted sepals and a primrose-coloured lip, and the golden-flowered D. densiflorum. The best Odontoglossum in the show, viz., O. Phalænopsis, came from Mr. J. Ward. It measured quite a yard through, and was thickly studded with Miltonia-like flowers, white in colour and spotted with rosy-lilac. The same exhibitor had also a robust specimen of O. Pescatorei, bearing four long branching spikes of bloom, and a deep rosy form of Skinner's Lycaste, furnished with twelve fine wax-like flowers; also O. hystrix, a large flowered form of the O. luteo-purpureum type, with three long spikes of yellow, brown-blotched flowers, and a large plant of Masdevallia Harryana, bearing twelve of its brilliant carmine, lilac-shot flowers. Among the Lady's Slippers we noted a splendid plant of Cypripedium Stonei, with flesh-green glossy leaves and four strong flower-spikes, on one of which were five long-petaled blossoms. C. barbatum was represented by many varieties, and there were likewise well-flowered plants of C. caudatum

C. villosum, and other varieties. Among miscellaneous Orchids we may refer to a well-grown example of the rosy-lilac Saccolabium ampullaceum, from Mr. Williams, who had also a well-flowered Vanda suavis. Mr. Ward had Epidendrum vitellinum, furnished with three strong flower-spikes; also a well-bloomed Odontoglossum Alexandræ; and a plant of O. Bictonense, which bore twelve tall spikes of brown-sepaled, lilac-lipped flowers. Oncids were represented by well-bloomed plants of O. sphacelatum, O. serratum, and others; and we also observed two or three forms of the old but ever welcome Lælia purpurata, of which the variety having pure white sepals and petals and a rich purple-dark-veined lip is the best and most effective.

Stove and Greenhouse Plants.—In the class for collections of new and rare species or varieties, Mr. B. S. Williams showed a well-arranged group, in which were specimens of Kentia Mooreana, one of the most noble of dwarf pinnate-leaved Palms; Polystichum lepidocaulon, Aralia elegantissima; Adiantum gracillimum, by far the most delicate and beautiful of all Maiden-hair Ferns; Araucaria Goldieana, a robust and distinct variety, well suited for cool conservatory decoration; and fine plants of Pandanus Veitchii, Cycas intermedia, Woodwardia radicans cristata, and Maranta Makoyana. Mr. J. H. Ley had well-grown plants of Cocos Weddelliana; Geonoma gracilis, a species resembling the last, but even more elegant in habit; Pritchardia macrocarpa, a new fan-leaved kind allied to the better known P. pacifica; Zamia Lindeni, one of the most distinct of Cycadaceous plants, having long pinnate foliage and oblong serrate leaflets of the brightest green. Mr. Ley had also Calamus metallicus, one of the most distinct Palms in the exhibition, the young foliage of which is of a rich bronze tint, quite different from that of the older leaves, which are of a dark glossy green colour. In a well-arranged collection shown by Mr. J. Wills, we remarked the new silvery-veined Phyllotænium Lindeni, and a well-coloured little specimen of the deep purple-leaved Artocarpus laciniata. In the nurserymen's class for twelve specimens, Messrs. Jackson & Sons showed some fine Heaths and Epacrises, also Aphelexis macrantha purpurea, Balfour's Clerodendron, and Statice profusa, a dense mass of purplish blue and white flowers. Other plants consisted of Hedaroma fuchsioides, Ixora coccinea, still the most effective of all Ixoras for exhibition, and a noble example of the brilliant Imantophyllum miniatum bearing upwards of twenty fine trusses of bloom. Mr. Williams also showed in this class, and Mr. Ward and Mr. Peed in that devoted to amateurs. Mr. Harrow, gardener to H. Bessimer, Esq., Denmark Hill, had the best group of fine-foliaged plants, and Mr. W. Forman, of Carlton House Gardens, Herne Hill, showed the best group of decorative plants arranged for effect. Excellent Palms and other fine-foliaged plants came from Mr. Ley, of Croydon, and Messrs. Wright, of Lee, Kent, and some well-grown Heaths from Mr. Ward and Mr. Peed, while Mr. Child, Mr. Ratty, and Mr. Ward had some fine Azaleas. Among the twenty-six varieties we noticed Iveryana, white; Maculata, double rose; Duc de Nassau, semi-double, rosy-crimson; Reine des Belges, salmon-rose, very delicate, and distinct; Holfordi, semi-double crimson; Barclayana, single white, Duchesse Adelaide de Nassau, scarlet shot with purple; arborea purpurea, a very distinct purple; and Criterion, delicate rosy-salmon, with a white margin. Mr. Legge and Mr. Wills had the best Dracænas. Ferns came from Mr. Williams, who had also several good specimens of Gleichenias; and fancy Pelargoniums were furnished by Mr. Turner and Mr. James, the latter having also a very attractive group of herbaceous Calceolarias, the colours of which were very vivid and distinct.

Roses in Pots.—Those shown by Messrs. Paul and Son and Mr. Turner were so nearly equal in point of merit that in each case a first prize was awarded. In Messrs. Paul's group were Madame de St. Joseph, a lovely Tea-scented Rose, having creamy-white petals, flushed with salmon, in the centre; Dr. Andry, vivid crimson; Madame Willermoz, a delicate white-flowered, Tea-scented variety; Celine Forrestier, one of the best of all yellows, with the exception of Maréchal Niel; Madame Margottin, a delicate creamy-yellow; Camille Bernardin and Paul Verdier, both full, bright, rosy varieties, belonging to the Hybrid Perpetual class; and Souvenir d'un Ami, delicate rose or blush, with finely-shaped shell-like petals. In Mr. Turner's group we remarked well-bloomed plants of La France, one of the most perfect of Roses; Celine Forrestier, in capital condition; Edward Morren, a fresh and full-bloomed variety of a bright rosy tint; and Charles Lawson, Madame Therese Levet, Madame Willermoz, Maréchal Vaillant, and others equally good. In the class for 20 specimens in 8-inch pots, Mr. Turner had the best group, in which we noticed well-bloomed plants of Jean Ducher, a distinct, new Tea Rose, in the way of Gloire de Dijon, but deeper in colour; Peach Blossom, a delicate variety, having satiny petals of a soft rosy tint; the new white or blush-coloured Madame Lacharme, and a well-finished plant of Royal Standard, a distinct and full Rose of great merit. In Messrs. Paul and Son's collection were well-flowered examples of Duke of Connaught, a new, dark-velvety, crimson-scarlet Rose of great merit; La France, in capital condition; Etienne Levet; the canary yellow-coloured Perfection de Montplaisir, and Madame Lacharme, bearing several good blooms. The same exhibitors also sent six large and effective stands of cut Roses, consisting of new or standard varieties.

Hardy Flowers.—Of these Mr. Parker showed, as usual, a select and well-grown collection, in which were several Funkias, just now the most effective of all outdoor fine-foliaged plants. Among them were F. ovata aurea, with soft pale green leaves; F. elegans viridis variegata with apple-green heart-shaped foliage, streaked and margined with dark glaucous green; F. ovata variegata, with elegantly furrowed, dark green, silvery-edged leaves, and others. A plant of the rosy-blossomed Spiræa palmata contrasted beautifully with its white-flowered ally S. japonica; the purple-spiked Orchis foliosa, too, was shown in excellent condition. A large clump of Iris spectabilis was also very showy, as were likewise pink and rosy forms of Scilla nutans, various kinds of Globe-flower, the white Snowdrop Anemone, and several Peonies, among which Pæonia tenuifolia and P. officinalis were most beautiful. The same exhibitor had also a select collection of cut flowers from hardy plants, including Star of Bethlehem, Centaurea montana, the Hawthorn-scented Aponogeton distachyon, Veronica gentianoides, and Spiræas. Pansies, double red-quilled Daisies, and a stand of show Tulips, were also shown in this class.

Miscellaneous Plants, &c.—Some splendid specimens of Tree Mignonette came from Messrs. Carter & Co., of Holborn, who had also a strikingly beautiful group of Palms, Ferns, and other fine-foliaged plants. Mr. John Laing, of Stanstead Park Nurseries, Forest Hill, sent an effective group of decorative plants, in which were several new and distinct bronze Zonal Pelargoniums, two of the best of those being Exquisite and John Jenner Weir. In the same collection were likewise some vigorous plants of Sempervivum Bollii, the curious S. tabulæforme, both very distinct and effective carpet bedding plants; the white variegated Day Lily (Hemerocallis disticha variegata), a perfectly hardy kind, but brighter in foliage when grown in a cool frame or pit. From Mr. Wills, of the Anerley Nursery, came a beautiful group of variegated and other fine-foliaged plants, including a panful of the new carmine-veined Bertolonia Van Houttei, fine plants of Dracænas, Begonia Chelsoni, profusely laden with pendent orange-scarlet flowers, and several choice Ferns and new Marantas. Messrs. Rollisson & Sons, of the Tooting Nurseries, had a group of Orchids, Ferns, and succulents; among the latter we noted half-a-dozen good plants of the beautiful Californian Echeveria pulverulenta, a broad-leaved form, having a dense coat of silvery powder on the foliage. Mr. Parker also had an attractive group of decorative plants, and Mr. Hooper, of Bath, sent some pretty stands of seedling Pansies. Messrs. Dobson had examples of their new Calceolarias, which are bright and distinct in colour, and Mr. J. Ley, of Croydon, contributed an attractive collection of New Palms, Ferns, and other stove plants. To all these exhibitions extra prizes were awarded, and also to Messrs. Dick Radclyffe and Co. for several tastefully arranged Fern cases and window boxes. A dozen potfuls of Strawberries in full bearing came from Mr. Bristow, gardener to George Campbell, Esq. It may be added that beautiful groups of Palms, Tree Ferns, Cycads, and other fine-foliaged plants from the Palace Gardens were arranged with much taste in front of the orchestra, where they made an effective display.

For a full list of awards see our advertisement columns.

ROYAL BOTANIC SOCIETY.

May 24th.

Notwithstanding the heavy showers which fell at frequent intervals on this occasion, this exhibition was most enjoyable; indeed, there is a freshness about the Royal Botanic Society's Exhibitions which we fail to find elsewhere—a circumstance, doubtless, in some measure attributable to the fact that the plants and flowers are arranged tastefully on turf banks, thus enabling the exhibition to be seen as a whole from more or less elevated standpoints, even when the tent is well filled with visitors. This show was by no means the best which we have seen here, there being a sameness in the appearance of the plants sent for competition, which even tasteful arrangement could not wholly obviate. The collection of stove and greenhouse plants furnished by Messrs. Jackson and Mr. B. S. Williams, nevertheless, were excellent examples of good culture, and the Azaleas were well bloomed, although by no means remarkable as regards size. Roses, in beautiful condition, came from Mr. C. Turner and Messrs. Paul & Son. Heaths were well represented by Messrs. Jackson and Mr. Ward, and Mr. Legge had well grown collections in the amateurs' class. The best nine Pelargoniums, likewise, came from Mr. Ward, and the same exhibitor obtained the first prize for half-a-dozen really well-grown Orchids, including one of the best plants of Odontoglossum vexillarium we have yet seen in a private collection. New plants were limited in number; that is, but few were certificated which have not been previously certificated elsewhere.

Certificates.—These were awarded to the following new and rare plants:—

Aralia Veitchii gracillima (Veitch, Williams, and Ley).—An elegant slender-habited plant, previously alluded to.

Araucaria Goldieana (Williams).

Cycas intermedia (Williams).

Croton Macafeeanum (Veitch).—A robust and effective plant, somewhat resembling C. Hookerii or C. aucubæfolium, but more luxuriant, and heavily blotched with golden-yellow on bright green ground colour.

C. Mooreanum (Veitch).—An effective variety, somewhat resembling C. Wisemannii, but in all respects larger and consequently more effective.

Eulalia japonica (Veitch).

Phyllanthus roseus pictus (Veitch).—A graceful stove shrub with oval white-blotched leaflets, the young foliage being of a clear rosy tinge.

Rhododendron Queen Victoria (Veitch).—A beautiful orange-flowered variety of the R. javanico-jasminiflorum type, well worth culture as a distinct and effective greenhouse plant.

R. Duke of Edinburgh (Veitch).—Similar in habit to the last, but having flowers of a more decided rosy tint.

Osmunda palustris (Veitch).—A beautiful marsh Fern, well suited for a cool Fernery, or for pot culture in a cool and moist situation.

Bollea Lalindei (Veitch).—A singular Pescatorea-like Orchid, bearing dark purple flowers, the sepals and petals of which are tipped with white. It is distinct, and well deserves culture.

Cypripedium Silligerum (Veitch).—This, the largest of all the hybrid Lady's Slippers, is the result of a cross between C. barbatum and C. lævigatum. It is distinct and well worth general culture.

Caladium Madame Herve (J. Laing).—A green-leaved variety, having a creamy-white centre, and conspicuous bright carmine veins.

C. Madame de la Deransaye (J. Laing).—Another larger-leaved variety of considerable merit.

Azalea indica, Jean Vervaene (Veitch, and Turner).

Habrothamnus Newellii (Newell).—A strong-growing seedling variety, bearing large and very ornamental fasicles of reddish-crimson flowers. Useful as a conservatory or cool greenhouse pillar plant or as a climber.

Pelargonium Zonale, Marmion (Denny).—A brilliant scarlet-flowered distinct variety, with circular blossoms as large as a florin. As exhibited the plant seems rather lax in habit, but the flowers are in all respects excellent.

H. P. Rose Magna Charta (W. Paul).—A large full variety of great merit, the colour being a warm rose flushed in the centre with fiery rose. It is well worth a place even in the most select collection.

Double Cineraria, Prince Imperial (E. G. Henderson).—A distinct double-flowered variety of a dark purplish-blue colour.

Double Cineraria, King Alphonso (E. G. Henderson).—A bright rosy-coloured variety of dwarf, compact habit, similar to the above, and equally well suited for decorative purposes.

Pansy, Jupiter Black (H. Hooper).—A large and well-formed variety, having very dark velvet-like flowers with a golden eye.

Pelargonium Zonale, J. Jenner Weir (J. Laing).—A bronze zonal of great merit, described above.

Pelargonium Zonale, Exquisite (J. Laing).—A well-marked bronze zonal, also already described.

Hybrid Mimuluses (Henderson's strain—E. G. Henderson).—Dwarf and compact, large yellow-flowered varieties heavily blotched with crimson-maroon.

Stove and Greenhouse Plants.—Of these some effective groups were exhibited, among which we remarked fresh and vigorous specimens of Imantophyllum miniatum bearing over twenty large clusters of bright orange flowers; also good plants of the pretty white-flowered Dracophyllum gracile, 4 ft. in diameter. Among Everlastings, we noted a richly-coloured plant of Phœnocoma prolifera Barnesii; also Hedaroma fuchsoides and H. tulipifera. In several collections we noticed excellent plants of the scarlet-spathed Anthurium Scherzerianum, and also some well-flowered specimen Heaths, especially a plant of Erica odora rosæ, a variety having globose, pure white, rose-scented flowers; this was in Mr. Chapman's collection, and the same exhibitor also had well-bloomed plants of Pimelea mirabilis, a bright rosy-flowered kind, and a large well-bloomed example of Erica ventricosa coccinea minor. One of the best collections in the show came from Mr. Ward, whose specimens of the bluish-purple Statice profusa, Balfour's Clerodendron, Erica ventricosa magnifica, Hedaroma tulipifera, and scarlet Anthurium, were in really excellent condition. Mr. G. Toms had a group of small but well-grown plants, consisting of an excellent and well-coloured Hedaroma tulipifera, a floriferous example of Erica Spenceriana, a mass of delicate rosy flowers and dark foliage, also a well-flowered plant of Stephanotis floribunda. Mr. Wheeler showed, amongst other plants, one of Aotus gracillima, a graceful-habited plant, bearing racemes of handsome, orange-coloured, pea-shaped flowers. In the nurserymen's class Messrs. Jackson showed well-grown groups, as did also Mr. B. S. Williams. In these the most conspicuous plants were Anthurium Scherzerianum, Statice profusa, the scarlet and white Clerodendron Balfourianum, Erica Cavendishii, and very effective plants of Epacris Eclipse and Azalea Diana. The finest scarlet Anthurium in the show, a very large-spathed variety, came from Mr. Ward. Azaleas were in many cases represented by fresh and floriferous plants, among which there was little novelty. Heaths were very attractive, the best being those sent by Messrs. T. Jackson & Sons. Among these we noted Erica Cavendishii, the best of all the yellow hybrids; E. mutabilis, with graceful, drooping, pink flowers; E. ventricosa coccinea minor, and E. ventricosa magnifica, both in capital condition; also E. tricolor impressa, and E. tricolor speciosa. Mr. Legge had a dozen well-flowered plants, the best of which were E. Candolleana, with salmon-tinted white flowers; E. Victoria, with glutinous, dark-red, white-tipped flowers; E. ampullacea, E. obbata, and E. ventricosa magnifica. Mr. Ward had a good group in which were E. elegans, E. mirabilis, and E. tricolor Eppsii, E. mutabilis, E. Cavendishii, E. depressa, and others. Mr. Ward had also very large and well-bloomed plants of E. florida and E. profusa, the last having glutinous dark red flowers, similar to those of E. Victoria. Show Pelargoniums in capital condition came from Mr. Ward, who obtained the first prize for nine specimens in 8-in. pots. Among these we remarked Exhibitor, bright rose and black; Lady Canning, salmon-rose, with a black spot; Warrior, scarlet and black; Desdemona, white, with a maroon spot; Rob Roy, bright rose, with a maroon spot; Emperor, salmon-rose, with a maroon spot; Prince Leopold, scarlet and black, similar to Warrior; Maid of Honour, pale lilac, with a dark spot, and Atalanta, rosy-scarlet with a black spot; other distinct kinds were Ruth, bright rose, shading into white in the centre, with a dark spot; Claribel, a pure white, with a faint rosy spot; Mabel, rosy-scarlet, with blotched maroon; and Countess, salmon-rose, blotched with black.

Orchids.—Among these we remarked healthy plants of Odontoglossum vexillarium, a species already alluded to, and O. Phalænopsis and O. Pescatorei, all in Mr. Ward's group; the same exhibitor had also a noble plant of Stone's Lady's Slipper, bearing twenty-nine flowers, and another of the carmine-flowered Masdevallia Harryana, bearing fourteen flowers. Mr. Denning had a well-grown group, the most noticeable specimens in which were Vanda teres, bearing twenty rosy-lilac flowers; Cattleya Mendellii, fresh and effective; a mass of Mrs. Benson's Dendrobe; a good Odontoglossum Alexandræ, and a well-flowered Cattleya Mossiæ. From Mr. Hepburn's garden came a well-flowered plant of Phalænopsis amabilis; a good panful of the snowy-flowered Cypripedium niveum; a plant of the long-tailed C. caudatum bearing ten very fine flowers; the yellow Anguloa Clowesii, bearing thirteen flowers, and a strong plant of Vanda suavis, bearing two strong pendent flower-spikes. The same exhibitor had also a panful of the hardy North American Cypripedium spectabile, bearing nine fresh and lovely flowers, a well-bloomed Dendrobium lituiflorum, and a plant of Roezl's Odontoglot, bearing six fine flowers on two strong spikes. Mr. Philbrick contributed a collection, including a large plant of Sobralia macrantha, and Mr. B. S. Williams sent a fine panful of Cypripedium barbatum, and a well-flowered plant of Lælia purpurata.

Roses in Pots.—Of these some lovely groups were shown, the best being one staged by Mr. Charles Turner, in which we noted well-bloomed plants of Princess Mary of Cambridge, a delicate blush variety, having soft and shell-like petals; Madame Margottin, a delicate sulphur Tea-scented kind; Paul Verdier and Charles Lawson, both good; La France, in excellent condition; also John Hopper, Celine Forrestier, and the fiery-tinted Edward Morren. Messrs. Paul & Son had a beautiful group, containing plants but slightly inferior to those just alluded to. In the class for twenty specimens in 8-in. pots Mr. Turner was again first with well-grown specimens, on which were some of the finest blooms we have seen on pot plants this season. Among these were Madame Lacharme, J. S. Mill, Etienne Levet, Rev. J. B. Camm (one of the most deliciously perfumed of all new Roses), and Princess Beatrice, a full pale rosy variety of considerable merit. Messrs. Paul & Son were second with less compact plants, among which we noted Centifolia rosea, Annie Laxton, Souvenir d'un Ami, Edward Morren, and others. Messrs. W. Paul & Son showed six effective stands of cut blooms; and beautiful examples of Maréchal Niel came from Messrs. Lane & Sons.

Miscellaneous Plants.—An effective group of Orchids, Ferns, and cut-leaved Japanese Maples, came from Messrs. Veitch & Sons, of Chelsea; among these we may mention the golden Oncidium Marshallianum, and its ally O. concolor; Pescatorea cerina, P. lamellosa, and the dark purple-flowered Bollea Lalindei; also a very fine specimen of Odontoglossum nævium, Lælia Wolstenholmiæ, and a large panful of the beautiful new Boronia elatior. Mr. Laing, of Stanstead Park, Forest Hill, furnished a tastefully-arranged collection of miscellaneous plants, among which we noted several new Crotons, Dracænas, Caladiums, &c. In this group was a plant of the golden-flowered Genista prostrata grafted on the Laburnum as a stock.

OBITUARY.

Henry Kingsley, the novelist, and brother of the late Canon Kingsley, died during the week. He wrote pleasantly of gardening as of other matters, and was an enthusiastic advocate of hardy flowers. In an inscription in a copy of one of his books "Geoffrey Hamlyn," now before us, he describes himself as "a fellow-soldier in the great fight against riband gardens."

NOTES AND QUESTIONS—VARIOUS.

The Sweet Barberry (Berberis dulcis).—What is the name of the shrub of which I send you a specimen? Its fruit is a black berry about twice the size of a Black Currant, and similar in appearance. Is it eatable?—T. G. F. [Your plant is Berberis dulcis, a native of the Straits of Magellan, where the fruit is used both in a green and ripe state for making pies and tarts, a purpose for which it is said to be nearly as good as Gooseberries or Currants.]

Borage under Glass.—Borage becomes greatly improved in appearance when grown under glass We usually lift some good strong plants of it in autumn, and grow them under glass, as there is frequently a demand for the flowering tops for flavouring wines, &c., when they are not obtainable from the open ground. Plants thus flowered are really quite handsome, their peculiar shade of blue being by no means common, especially in winter. Borage so readily reproduces itself from seed that, if once established, there is little fear of losing it.—J. Groom, *Henham*.

Small Plants of the White Arum.—The common white greenhouse Arum (Calla æthiopica) is, like most other flowers, usually appreciated in proportion to its size and perfection of blossom, resulting from good cultivation; but the plant is so unique in its way that small specimens with small flowers are valued for certain purposes in decoration. Hence, we sometimes see very small plants in the market and with flowers not half the usual size. They are starved in small pots.

No. 237.] SATURDAY, JUNE 3, 1876. [Vol. IX.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

A WILD GARDEN IN OXFORDSHIRE.

How much a wild garden intelligently and tastefully carried out may effect for a country seat is fairly well shown in a garden in Oxfordshire. Here our correspondent "Oxon" has formed one of the earliest, and probably one of the largest wild gardens existing, and which we, visiting it on the 27th ult., found full of novel charms. No old-fashioned garden yields its beauty so early in the year, or over a more prolonged season, than the wild garden, as there is abundant evidence here, but our impressions shall be those of the day only. Thus, writing at the end of May, we may serve to throw light on the possibilities of garden embellishment in one way at a season when there is a great blank in many gardens—the time of "bedding out." "Oxon" had no favourable or inviting site with which to deal; no great variety of surface, which makes attempts in this direction so much easier and happier; no variety of soil, which might enable plants of widely different natural habitats to be grown; only a neglected plantation, with rather a poor gravelly soil and a gentle slope in one part, and little variety of surface beyond a few gravel banks thrown up long before. The garden is, for the most part, arranged on each side of a Grass drive among rather open ground, between trees on the one hand and rather shady ground on the other. The most beautiful aspect at the end of May of this singularly ungenial spring, which has not allowed the Peonies to unfold here yet, is that of the German Irises, with their great Orchid-like blossoms seen everywhere through the wood, clear above the Grass and other herbage, stately and noble flowers that, like the Daffodils, fear no weather, yet with rich and delicate hues that could not be surpassed by tropical birds or flowers. If this wild garden only teach this effective way of using the various beautiful and vigorous kinds of Iris now included in our garden flora it would do good service. The Irises are perfectly at home in the wood and among the Grass and wild flowers; we have never before seen them to such advantage. By-and-by, when they go out of flower, they will not be in the way as in a "mixed border," tempting one to remove them, but grow and rest quietly among the Grass until the varied blossoms of another year well repay the trouble of substituting these noble hardy flowers for some of the familiar weeds and wild plants that inhabit our plantations. In the wild garden the fairest of our own wild flowers may be happily associated with their relatives from other countries. Here the sturdy Bell-flowered Scilla (S. campanulata) grows wild with our own Bluebell (S. nutans); the white and pink forms also of the last-named look beautiful here associated with the common well-known form. The earlier Scillas are of course past; they are admirably suited for the wild garden, especially S. bifolia, which thrives freely in woods. The Lily of the Valley did not inhabit the wood before; therefore it was pleasant to thin out some of its over-matted tufts and carry them to the wild garden, where they are now in fullest beauty. It is associated with its tall and stately relation the Solomon's Seal, which we never saw to such perfection as in this wild garden, the partial shade suiting it. The Solomon's Seal, which is usually effective when issuing forth from fringes of shrubberies, is here best arching high over the Woodruff and other sweet woodland flowers, among which it seems a giant, with every leaf, and stem, and blossom full of lines of beauty. The additional vigour and beauty shown by this plant when in rich soil well repays one for selecting suitable spots for it. The greater Celandine (Chelidonium majus) and its double form are very pretty here with their tufts of golden flowers; they grow freely and take all needful care of themselves. The same may be said of the Honesty, the common forms of Columbine, and Allium Moly, an old-fashioned plant, and one of the many subjects at home in the wild garden, and which are better left out of the garden properly so called. Of past and future effects we said we would say nothing, but the myriads of Crocus leaves dying off without the indignity of being tied into bundles as is common in gardens, the dense growth of Aconite and Snowdrop leaves, of coloured and common Primroses and Cowslips suggest the beauty of this wild garden during the past spring. The yet unfolded buds on the many tufts and groups of the numerous herbaceous Peonies promise noble effects early in June; so do the tufts of the splendid Eastern Poppy (Papaver orientale) and the Lilies, and Sweet Williams, and Adam's Needles, and many other subjects, that will show their blossoms above or among the summer Grass in due time. One of the most beautiful and free-growing orders of plants among those most suitable for the wild garden is the Borage or Forget-me-not Order; among the best of these here at present are the Caucasian Comfrey (Symphytum caucasicum) an admirable wood or copse plant, and red-purple or Bohemian Comfrey (S. bohemicum), which is very handsome here. And what lovely effects from the Forget-me-nots—the wood Forget-me-not, and the Early Forget-me-not (M. dissitiflora) are here! where their soft little clouds of blue in the Grass are much prettier than tufts of the same kind surrounded by the brown earth in a prim border. Here the pushing of the delicate Grass blades through the blue mass and the indefinite way in which the fringes of the tufts mingle with the surrounding vegetation are very beautiful. The only noticeable variation of surface is that of some gravel banks, which are properly covered with Stonecrops, Saxifrages, and the like, which would, as a rule, have a poor chance in the Grass. Surfaces that naturally support a very sparse and dwarf vegetation are valuable in a garden as they permit of the culture of a series of free-growing Alpine and rock plants that would not be able to hold their own among Grass and ordinary weeds and wild flowers. One of the happiest features of this wild garden results from the way in which dead trees have been adorned. Once dead some of the smaller branches are lopped off, and one or more climbers planted at the base of the tree. Here a Clematis, a climbing Rose, a new kind of Ivy, a wild Vine, or a Virginian Creeper, have all they require, a firm support on which they may arrange themselves after their own natural habit without being mutilated or without trouble to the planter, and fresh ground free to themselves. In this way the more vigorous of the new Clematises may be grown to perfection. What an admirable way, too, of growing the many and varied species of Clematis! to our thinking as beautiful as those with flowers as large as saucers. Even when an old tree falls and tosses up a mass of soil and roots the wild gardener is ready with some subject from his mixed border to adorn the projection, and he may allow some choice Bramble or wild Vine to scramble over the prostrate stem. A collection of Ivies grown on old tree-stems would be much more satisfactory than on a wall, and not liable to rob each other at the roots and interfere with each other in the air. Ferns are at home in the wild garden; all the strong hardy kinds may be grown in it and look better in it among the flowers than in the "hardy Fernery" properly so called. Even more graceful than the Ferns, and in some cases more useful because they send up their plume-like leaves very early in the year, are the giant Fennels (Ferula), which grow well here and hold their own easily among the strongest plants. The common Fennel is also here, but it seeds so freely that it becomes a troublesome weed and shows a tendency to overrun plants of greater value. This reminds us of certain subjects that should be introduced with caution into all but the remotest parts of the wild garden. Such plants as Heracleum, Willow Herb, and many others that overcome all obstacles, and not only win but destroy all their fellows in the struggle for life, should only be planted in outlying positions, islands, hedges, small bits of isolated wood or copse, where their effects might be visible for a season, and where they might ramble without destroying. In short, they never should be planted where it is desired to encourage a variety of beautiful subjects. Rabbits—dreaded vermin to the wild gardener—are kept out here effectually by means of wire fencing. The presence of these pests prevents all success in the wild garden. It would be well if one could keep out slugs by the same simple means. The encouragement of creatures that feed on slugs is desirable, as these are the most potent cause of mischief to hardy flowers. To succeed with the wild garden, one should have a good collection of hardy flowers from which it can be supplied. "Oxon" has formed an excellent one, consisting of about 1100 species mostly arranged in borders. From these, from time to time, over-vigorous and over-abundant kinds may be taken to the wilderness. In a large collection one frequently finds species most suited for full liberty in woods. The many subjects good in all positions, may increase in these borders till plentiful enough for planting out in some quantity in the wild garden. The wild garden to which we have been adverting has been wholly formed by Oxon," who planted with his own hands the various subjects that now adorn it throughout the year. It has been done within four or five years, and, therefore, many of the climbers have not as yet attained full growth. We need hardly point out how agreeable the work, or what a charming source of exercise and amusement it must be to a lover of flowers, even apart from the rich harvest of beauty, one phase of which we have tried to describe. W. R.

[We shall be grateful to any of our readers who may send us information as to other successful experiments in the formation of wild gardens. The movement is a healthy one, and likely to add much to the interest of country gardens and country life, and accounts of successful beginnings in this way would probably be of service to many of our readers.]

VEGETATION OF CORSICA.

Three separate upheavals have occurred in the formation of Corsica. The first and remotest brought up from the floor of the Mediterranean a long chain of granite, that extended from Cap Corso in the north of the island to the Straits of Bonifaccio in the south; this bare range may, therefore, be regarded as the backbone of Corsica. After a long lapse of ages a second convulsion gave us another upheaval of granite, with its attendant conglomerates of porphyry and serpentine coalescing or overlying, as the case might be, and giving breadth and compactness to the earlier granite chain. Again another lapse of time, and a third upheaval deposited, more especially in the north and south, layers of carboniferous and allied limestone, that formed a sort of breastwork or shoulderwork to the granite, thus mellowing and fertilising the naked mass. Time has brought down to the valleys or sea-coast line a *débris* formed from the gradual wearing down of these upper rocks, and the result has been a rich and varied soil that is clothed with a corresponding vegetation. We may divide the botany of Corsica into three zones, and I would remark that these zones or belts largely partake of the vegetation of those countries that they severally face, France, Spain, Barbary, and the Italian mainland being each represented. The tract approaching the shore gives us the first zone. This is the Mâquis (Macchia-bush or scrub) of the island. It consists principally of evergreen shrubs thickly massed and matted together. I counted no fewer than forty of these shrubs and creepers, which often attain large dimensions. The more conspicuous among them are the Arbutus Unedo with Strawberry-like fruits, the broad and narrow-leaved Myrtles in rich black berry, the Cistuses (C. monspeliensis, salviæfolius, and corsicus), the fruiting Lentisk tree (Pistacia Lentiscus), Lavender (Lavandula Stœchas), the Phillyreas, the Indian Fig in flower and fruit, the Rosemary, Tree Heath (Erica arborea), Rhamnus Alaternus, Laurustinus, Smilax aspera, and notably Helichrysum angustifolium; the Ruscus aculeatus loaded with coral berries, Inula viscosa, the Madder and Asphodel, the prickly Corsican Broom (Genista corsica), the Daphne (D. Gnidium), and the Clematises (C. Vitalba and Flammula). Here and there, where the bush has been cleared, vineyards and Orange and Lemon groves are found together with tracts of cereals, that seem to thrive with but little trouble on the part of the cultivator. The second zone embraces plantations of Olive trees, trenched and terraced as we find them in the Riviera; here, too, are the Chestnut, Fig, and Almond, which ripen their fruits in perfection; the Chestnut, indeed, flourishes at an altitude of 5000 feet. The third zone, and the highest, adapts itself to the growth of forest trees. Here flourish the Pines (Pinus Laricio and Picea), the Ilex and Yew among evergreens, the Beech and Alders (Alnus suaveolens and cordata), and Larch and Oaks among deciduous trees. Corsica abounds in Labiates. These, indeed, cover every portion of the land, and perfume the air to such an extent that Napoleon, when an exile in St. Helena, was heard to say that he could tell his native Corsica, even though his eyes were shut, by the aroma that was shed around by the vegetation.

Hovingham Lodge, York. PETER INCHBALD.

ADVANTAGE OF SUMMER MULCHINGS.

During very dry weather, after the ground has been previously warmed by means of sun-heat, mulching is highly beneficial, not only in the vegetable department, but also in that devoted to fruits and flowers. It saves much labour in watering, and also helps to enrich the soil. If we mulch a Vine border in autumn with litter, leaves, or half-rotten manure, these materials will, to some extent, retain the heat absorbed during summer, and will help to keep the roots warm; but if the mulching be left on during the warm days of spring and the early part of summer it will prevent the roots being benefited by the heat derived from the increased sunshine. It is clear, therefore, that both in the case of vegetables and that of flower-beds it is necessary that the soil should be warmed to some extent before mulching is applied, as after that not only is moisture longer retained in the ground, but the latter is kept proportionately cooler than it otherwise would have been. Mulchings are disliked by some on account of their untidy appearance, especially when scattered about by birds in search of food in dry weather; but their benefit to vegetation in hot weather is indisputable. The best material for mulching is partly decayed hot-bed manure, but when this cannot be obtained, short Grass from the lawn may be used with advantage. All fruit and vegetable crops, as has already been stated, are benefited by being mulched, but some of them more so than others. The Raspberry, which delights in a moist soil, with its roots near the surface, should always be mulched in dry situations. Even on soils that are thin and otherwise unsuitable for Raspberries, good crops of that fruit have been obtained by mulching. Pyramidal and bush fruit trees that are occasionally root-pruned should also be mulched, especially in dry seasons, with half-rotten manure; but the mulching should not be applied too early, as in that care it prevents the sun from warming the soil left cold after the winter. Its good effects on the growth of young Gooseberries and Currants, and on that of stone fruits, are very conspicuous; all newly planted trees, too, are the better for being mulched both winter and summer. As regards Strawberries, the crop is quite doubled in bulk when the plants are properly and carefully mulched as they come into bloom. Celery, too, when mulched with short Grass, requires but little water, and its growth is more robust and succulent than when otherwise treated. In dry summers, and more especially towards autumn, Peas often become affected with mildew, unless a good mulching of manure about a foot wide be laid along the sides of the rows—a mode of treatment which greatly improves the crop. Winter Greens and autumn Cauliflowers progress slowly when planted in dry hot weather in June, but if the ground be but even sprinkled over with short Grass, they will be found to grow away freely. Potatoes are an exception; they do best without mulching; for should the autumn prove wet, it would certainly aggravate the disease. In flower gardens mulching is highly beneficial, but it is unsightly if not covered with mould. In the case of Calceolarias, it is absolutely essential, in order to maintain healthy vigour and keep off disease. Iresines, which are moisture-loving plants, when well mulched thrive and prosper in situations in which they would otherwise scarcely exist. Roses, too, should be mulched with horse manure, the fertilising properties of which get washed down by means of rain and artificial waterings to the root. The best mulching for flower gardens is Cocoa-nut refuse; but where the beds are large it would be too expensive, and in that case half-decayed vegetable mould, or half-rotten manure put through an inch sieve, would probably answer the purpose, and not be unsightly. Plums, Peaches, Figs, or Vines grown in large pots should be mulched two or three times during the growing season, inasmuch as the roots are generally near the surface and are liable to suffer from want of water. Setting aside the advantages of mulching, as regards the saving of labour and retaining moisture in the soil, it keeps the roots in an even temperature and prevents the escape of heat from the ground in cold weather. R.

Haricot Beans.—There is seldom much difficulty in getting a fair variety of vegetables throughout the summer months, but in winter it is not so easy. As one means of providing it at a cheap rate, we would recommend the growth of Haricots. They are very productive, and a few rows will provide a continual supply of these nutritious vegetables. The tall varieties might often be grown on vacant walls or fences, or be allowed to ramble over the roofs of outhouses, clothing these with verdure, while contributing to the supply of the table. There are several varieties; but the Dwarf White Runner and Dwarf White Haricot are perhaps as good or better than any other. There is also a very large white variety which grows to a great height, and is large in pod and bean, and very prolific. The culture of Haricots is identical with that of the common French and Runner Beans. The soil can hardly be too rich for them if perfection be aimed at. A deep tilth, abundance of manure, and a warm, rather dry site are conditions most favourable to this crop.—D. T. Fish.

HOW TO DRY PLANTS.

THE materials recommended for this purpose by the Rev. George Henslow, in a contemporary, are common cartridge-paper, thick white blotting paper, cotton wadding, and millboard, all cut to the same size. The plants should be gathered in dry weather, and soon after the flowers open, when their colours are brightest. Succulent plants (such as Daffodils, Orchises, or Stonecrops) should be put into scalding water, with the exception of the flowers, for a minute or two, then laid on a cloth to dry. Arrange the specimens and papers in the following order:—Millboard, cartridge-paper, wadding (split open, and the glazed side laid next to the cartridge-paper), blotting-paper; the specimens having small pieces of wadding placed within and around the flowers, to draw off all the moisture as quickly as possible, blotting-paper, wadding as before, cartridge-paper, millboard. When the specimens, &c., are thus arranged, heavy weights should be put on them: about 30 lbs. the first day, 60 lbs. afterwards. Remove them from under pressure in a day or two; carefully take away all the papers, &c., except the blotting-papers between which the specimens are placed; put these in a warm air to dry, whilst the removed papers, &c., are dried in the sun or by the fire. When dry (but not warm) place them in the same order as before; put all under the heavier pressure for a few days, when (if not succulent) they will be dry. Flowers of different colours require different treatment to preserve their colours. Blue flowers must be dried with heat, either under a case of hot sand before a fire, with a hot iron, or in a cool oven. Red flowers are injured by heat; they require to be washed with muriatic acid, diluted in spirits of wine, to fix the colour. One part of acid to three parts of spirit is about the proportion. The best brush with which to apply this mixture is the head of a Thistle when in seed, as the acid destroys a hair pencil, and injures wherever it touches, except glass or china; therefore it should be used with great care. Many yellow flowers turn green even after they have remained yellow some weeks; they must, therefore, be dried repeatedly before the fire, and again after they are mounted on paper, and kept in a dry place. Purple flowers require as much care, or they soon turn a light brown. White flowers will turn brown if handled or bruised before they are dried. Daisies, Pansies, and some other flowers must not be removed from under pressure for two or three days, or the petals will curl up. As all dried plants (Ferns excepted) are liable to be infested by minute insects, a small quantity of the poison, corrosive sublimate, dissolved in spirits of wine, should be added to the paste, which it will also preserve from mould. The best cement for fixing the specimens on to the paper or cardboard is gum paste. It is composed of thick gum-water and flour mixed in warm water, by adding the two together warm, and of a consistency that will run off the hair brush.

Diseased Phloxes.—Being an old grower of Phloxes, and the possessor of a fine collection of them, I think I can throw out a suggestion that will meet the difficulty in which "Rose" (see p. 498) is placed. My Phloxes have been affected with the same complaint as hers, and my remedy, which is as follows, has always proved effectual. When checked in the manner she describes, the best plan is to cut them hard in, say to one or two eyes, and re-pot them, giving them a liberal shift and just sufficient water to keep the soil moist; this will eradicate the evil without fail. In answer to the query as to whether Phloxes are more delicate now than formerly, my experience induces me to form an opposite opinion. Some of the newer high-coloured varieties may be a little delicate, but, take Phloxes as a whole, they possess more vigour, and are certainly better in habit, than the kinds which we used to grow years ago.—F. T. DAVIS, *Plumstead Common.*

Ornamental Hedges.—In reply to "Ellerslie's" inquiries (see p. 510) with regard to the Wild Rose, as recommended recently for hedges, together with the Wild Clematis, or Travellers' Joy, I can state with confidence that I believe the Wild Rose to be quite as capable of being kept within any desired bounds as to height or thickness as any other Rose, but the principal advantage of its employment in hedges is the combination of great strength and powers of resistance, by means of the length of the sprays which can be entwined like basket-work, or, if the locality permit, hung in garlands from bush to bush (if such be planted) in the hedge. There is no difficulty in making an ornamental flowering hedge within the boundary of a garden, against lattice-work or wires, but the hedge for which Wild Roses were recommended was intended as an impassable barrier, to combine ornament with use; and were I again to make a new hedge, I should facilitate the process by straining strong tarred cord through any common posts, for the purpose of interlacing in the firmest manner the thorny shoots of the Wild Rose as they grew, by which means, long before the tarred cord would have rotted away, the hedge would be self-supporting by means of a sort of natural basket-work, similar to that which I have seen in Germany, in the case of Quicks. When the latter are planted on each side of small sticks, crossed diamond-fashion (like those placed for the support of Kidney Beans), the shoots become entwined with each other and interlaced with the sticks. In course of time the sticks rot away, but the fence is so close, strong, and firm, owing to the growth of the boughs thus trained, that it would be almost impossible for a cat to pass through it, even at the bottom. The Quick is, however, a slow-growing and expensive fence, and one which requires a good deal of culture as regards the soil in which it is planted, and a great deal of attention afterwards, and there is no doubt that our native thorny climbers, the Wild Rose, Bramble, &c., might be substituted for it with advantage, both as regards utility and expense, and they would be more ornamental.—LL.

—— We have an ornamental hedge here which would probably suit your correspondent (see p. 510). A piece of rabbit-netting of the height desired is stretched along the line where the fence is required, and fastened to posts made either of iron or wood. The ground is then thoroughly trenched, adding at the same time plenty of manure. Ivy is then planted thickly and tied to the netting, and at every 5 or 6 ft. apart a Honeysuckle and the old pink and crimson China Roses are planted, but no Clematises, as these would have but little chance with the Ivy. The effect of the hedge when the Honeysuckle and Roses are in bloom is charming, and the Roses keep blooming generally up till Christmas.—J. B.

Climbers on Dead Trees—Ornamental Gourds.—The readers of THE GARDEN are much indebted to a recent correspondent for this excellent plan of rendering dead trees ornamental, and a further benefit would be conferred by the names of an additional number of annuals which would reach the desired height in the course of the season; and still more valuable would be a list of the quick-growing wild or cultivated Roses and other perennials, which would flourish and grow quickly under shade when planted against forest trees. With regard to annuals, one of the most striking garden ornaments on the Continent (even in the northern parts of Italy, and also portions of Switzerland), are the Pumpkins, which are planted at the foot of large trees, grow to a considerable height, twine along the branches, and bear fruit in abundance; but such ornaments are never seen in any part of Great Britain, and though Pumpkins and Gourds are grown to some extent (though too sparingly) in our gardens, yet the edible kinds are never seen climbing up trees, and numberless beautiful ornamental miniature varieties in the form of Pears and Oranges, in every shade of green and yellow, besides pure white, with their very fine foliage, are scarcely ever trained as they ought to be among flowering plants, so as to render hedges more effective, or against wire or wooden trellises: thus managed, they have a beautiful effect, and cannot be too highly recommended.—L.

Tree Pictures in Kensington Gardens.—The crowds who flock to Bushy Park or Kew do not see, says the "Times," anything more fair than the tree pictures now in Kensington Gardens. The Hawthorns and Horse Chestnuts are now in marvellous beauty, though one rarely sees anybody taking the least notice of them. All the blaze of the autumnal bedding out is in point of beauty as nothing compared with what is now afforded here by a few kinds of ordinary hardy trees that cost little at first and take care of themselves afterwards. There is a little open lawn with a small Lime tree in its centre quite near the Row corner of the Gardens, around which there are several charming aspects of tree beauty. One Hawthorn is about 40 ft. high. Some of the central and unfrequented portions of the Gardens are the most attractive. Nobody can despair of growing flowering trees to his heart's content in London after seeing the mountains of Horse Chestnut bloom and other masses of tree flowers here. Let those interested see the old trees in the central parts as well as the newer plantations, which, however, are also beautiful.

Converting Carboys into Hand-lights.—To cut glass vessels neatly, heat a rod of iron to redness, and having filled the vessel the exact height you wish it to be cut with oil of any kind, proceed very gradually to dip the red-hot iron into the oil, which, heating all along the surface, the glass suddenly chips and cracks right round, when you can lift off the upper portion clean by the surface of the oil. The bottoms of carboys and bottles, according to the "Gardeners' Magazine," can be cut off by making a slight nick with a file and then marking round with a streak of water where you want it to come off. Make an iron red-hot and lay it on the nick. This will cause it to expand and crack, then by moving the rod round the crack will follow. When the carboys are rather large, it is better to have two rods heated, or while you are reheating the iron, the crack might take a transverse direction.

NOTES OF THE WEEK.

—— The Royal Botanic Society have completed their fine conservatory in the Regent's Park by the addition of another wing. It is built by Mr. Turner, of Dublin, whose curvilinear iron glass-houses are among the best we have seen. We hope the Society may some day possess a collection of well-grown plants in this house, which is now perhaps the finest large house for growing plants in the neighbourhood of London.

—— Among the old flowers that bloom at this season is the common Greek Valerian (Polemonium cœruleum): a large flowered form, called P. cœruleum grandiflorum, now in bloom is sufficiently distinct to merit general culture as a border flower. We believe it is in Messrs. Henderson's collection, and we noticed it among the border flowers at Crowsley Park.

—— There are some who admire single Roses, some, too, single Camellias, and in each case with good reason, we think. Single Peonies have, probably, fewer admirers, and yet one (P. Whitleyi) sent to the Aquarium Exhibition by Mr. Parker, of Tooting, is one of the most beautiful flowers we have ever seen—a large white bloom, with a huge boss of yellow stamens in the centre.

—— We saw the other day at Messrs. Hooper's, in Covent Garden, a compact-habited, double-flowered Begonia, named B. salmonea fl.-pl., which differs from all others that we have yet seen, in bearing only male flowers. These are produced in clusters of from two to five on a scape from 6 in. to 9 in. in length, and are of a delicate rosy-salmon colour. It promises to be a useful plant for decorative purposes.

—— Mr. Robert Osborn sends us specimens of Camassias now in flower in his Nursery at Fulham. "The first flowering one (C. esculenta) has been for some time in great beauty, but is beginning to fade; C. tardiflora, a kind which seems to be very little known, is, however, now coming on to replace it; both are among the most plentiful of our spring flowers. The colour is a lovely blue, and in a mass, as we have them, the effect at a distance as well as close is very beautiful."

—— Iberis correæfolia, now in bloom in many gardens, seems to possess the (to many) valuable qualities of thriving perfectly in the polluted air of cities. In Victoria Park there are thousands of snowy masses of this plant, though the air there of late years has been most destructive even to many trees and shrubs usually supposed to withstand the evil effects of smoky, dusty, and otherwise polluted air.

—— The variegated form of the now popular Spiræa (Hoteia) japonica is valuable for its flowering qualities apart from the variegation. The flower-stem is dwarfer, and the panicle more compact than is the case with the ordinary green-leaved form. Mr. R. Parker, who grows both forms admirably in pots, pointed out this peculiarity to us the other day, and the fact is worth noting by those who grow herbaceous plants in pots for exhibition or other purposes.

—— Our London flower shows are now-a-days so deficient in surprises, so far as the larger class of specimen plants are concerned, that it was somewhat of a relief to find Messrs. Lucombe & Pince sending superbly grown collections of plants all the way from their famous nursery at Exeter, and beating some of our most successful exhibitors. We are informed that a specimen of Ixora javanica, in the Lucombe Nursery, now coming into flower, promises to bear 200 trusses.

—— Mr. Culley, writing to us on the 29th ult., says that Dendrobium Falconeri is in great beauty at Ferniehurst, and that when all the flowers shall have opened they will amount to eighty-three. The flowers measure $4\frac{1}{2}$ in. across, the lip itself being $1\frac{1}{4}$ in. broad. On six growths of Dendrobium Devonianum there are 189 flowers; and Utricularia montana is producing 136 spikes, each bearing from four to seven flowers. On eleven spikes of Odontoglossum vexillarium there are fifty-two blooms, which in the course of a week will be in great beauty, the kind being the bright pink variety. On Odontoglossum Bluntii we had last month sixty spikes of flowers, and have now as many as forty, all in great beauty. Odontoglossum Pescatorei has six spikes and twenty-five flowers on the spike; and Odontoglossum nævium and O. Roezli are nearly equally good.

—— We see so much of the West End parks and their beauties that the various charms of Victoria Park are perhaps taken less notice of than they deserve. It is, however, very beautiful at this season, now that the various flowering trees and shrubs are in blossom. The islands are particularly noticeable, showing, as they do, a fine variety of tree forms, relieved here and there by flowering shrubs. Beneath the trees and shrubs is a carpet of the common Red Lychnis, which covers rhe banks, and comes down to the edge of the water, forming rosy meadows of flowers. The design in various parts being natural and graceful, there are many pretty peeps to be seen. Later on the fine display of bedding plants now being prepared by Mr. McIntyre will be very attractive.

—— Daffodils are planted on Grassy banks in Victoria Park, where they bloom and go to rest before there is any need for much mowing. If this may be done in the more central parts of a pleasure garden, as in this case, how much more conveniently may the system be carried out in less prominent positions.

—— The "Floral Magazine" is henceforward to be edited and its plates drawn by Mr. F. W. Burbidge, and the number just issued contains four plates drawn by him. They consist of Phalænopsis Veitchii, Hibiscus Collerii, Auricula Alexander Meiklejohn, and hybrid perpetual Rose, Duke of Connaught, one of the finest of the new Roses.

—— Some of our readers may remember that an unprincipled contractor undertook to improve Euston Square—and how he converted it into a rubbish shoot. The "Gardeners' Chronicle," in printing a paragraph commenting on this, adds the following editorial note:—"The gardens on the Thames Embankment and in Leicester Square are also not creditable to those who have the management." It is with reluctance we comment adversely on any course taken by a contemporary journal, but in this case it is only justice to the superintendents of the gardens mentioned to say that they are in as good condition as any other public gardens about London, and that there is no reason whatever for associating the Thames Embankment gardens with the rubbish shoot in Euston-square.

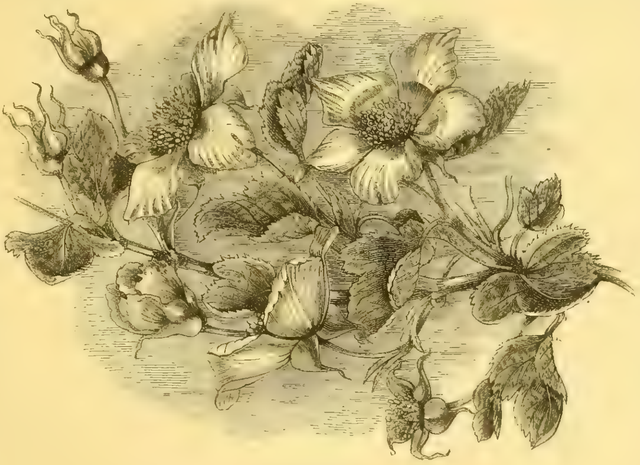
—— The Japan Lady's Slipper (Cypripedium japonicum), a rare and curious hardy Orchid, is now in flower in Messrs. Rollisson's Nursery at Tooting, and we recently saw some strong growths of it in Mr. Ware's Nursery at Tottenham, where the plant has stood out all the winter in an open-air bed. This Lady's Slipper is one of the most singular in the whole group to which it belongs, the fresh green leaves being borne in pairs like those of the common Twayblade (Listera ovata), only in this case they are in shape like a lady's fan, the outer margin being irregularly torn or jagged; the sepals and petals are greenish suffused with brown, and the lip is rosy-purple veined with a deeper purple. It is satisfactory to find this Lady's Slipper so hardy and amenable to culture, inasmuch as it is one of the most interesting and precious of all plants for planting along the outer margins of sheltered bog gardens associated with C. spectabile, the golden-lipped C. pubescens, and the purple Sarracenia or Huntsman's Cup.

Variegated Abutilons.—Among these the somewhat common A. Thompsoni is still one of the best for either indoor or outdoor decoration, but it is in a cool, airy, light greenhouse that it is seen to perfection, as its ornamental and prettily-variegated foliage is under such circumstances fully developed. Grown in a hot, moist stove, it is a poor weedy plant, with almost green leaves; but in a cool house the bright mottling of the foliage is very distinct. The slender and erect habit of the plant necessitates its culture in small pots, and frequent stopping, so as to have plants about 6 in. or 1 ft. in height, furnished with leaves to the bottom. For side plants for table decoration these small Abutilons are admirably adapted, and the variegation is of a striking kind under artificial light. Still neater in habit, and more profusely and constantly variegated, is the narrow, angular-leaved A. vexillarium, which also grows slower and retains its leaves better. It is an excellent edging plant for large vases, and associates well with Maiden-hair and other Ferns in such positions. Cuttings made of the tops strike readily, and if a slender stake is put to the shoot—for it keeps to one shoot as a rule—it forms one of the neatest little plants that could be desired, and a quantity of it sprinkled throughout the greenhouse gives quite a lively aspect at any season, for it can be had all the year round. I keep all my plants in 3-in. pots chiefly in order that they may fit into small vases; but it, and indeed the other kinds as well, belongs to that class of plants which will bear turning out of their pots for a few days when required, without much injury. One of the most striking of the species, however, is A. marmoratum, which makes a capital table plant. The leaves are broad, measuring nearly 6 in. across, distinctly heart-shaped, and present different shades of variegation, varying from pale yellow to bright green—the yellow tints predominating. The plant is symmetrical in shape, too, and on the whole is one which will commend itself to cultivators, as being generally useful. I have at present a number of useful plants of it in 4-in. pots, which have been frequently in and out of the house without showing any bad effects. Among other ornamental-leaved Abutilons may be mentioned A. tessellatum and A. variegatum. They all strike easily from cuttings, and thrive in a compost of loam, leaf-mould, and sand. —Chef.

THE FLOWER GARDEN.

PREPARING AND PLANTING FLOWER-BEDS.

NEXT to the propagation of the plants, the work of preparing beds for them is the most important. Irreparable mischief may be, and often is, done at this stage, and more particularly when the furnishing and planting of the garden is done by contract, as is now frequently the case with villa gardens in the neighbourhood of towns. Manure must be given either when the beds are dug before planting, or in autumn. Most bedding plants are gross feeders, and, being generally planted thickly, they soon impoverish the soil. Besides, rotation cannot often be practised in the flower garden, and the same species have usually to occupy the same beds year after year. Liberal manuring is therefore essential, and no one will neglect it who desires to see his beds well filled during the summer months; and it may just be hinted that the fewer the plants, the higher should be the culture. But thick planting should be the rule, for in this country we are compelled to delay bedding out till so late in the season, that we cannot afterwards wait till the plants grow. Rank manure is not objectionable if it be dug into the beds in autumn, but it should be well rotted if given in summer. Let me now advert to the digging of the beds, an operation which is seldom done well by an ordinary workman if left to himself. He does not go into the corners of intricate figures; and digging closely but carefully up to the Box or Grass edgings, so as to leave a good deep tilth for marginal plants instead of a hard crust, is too much for his patience. I always feel all the corners and edges with a stake before commencing to plant, in order to make sure that they have received attention. The digger should begin by first "nicking off" his edges and cleaning all the weeds, &c., therefrom; and in digging he should have a good opening, that he may see what he is about—take thin spits, which should be thoroughly broken up as they are turned over, disintegrating the manure also, and mixing it with the soil as he proceeds—and when coming to the edge of the bed, or to a point, he should cut straight down close to the edging, and then turn the spit over its full depth. If he be a good workman, he will preserve the outlines and contour of the bed as he goes on; but any unevenness can be rectified at the end by a few touches of the spade, and the bed is ready for the plants. No raking is admissible in a flower-bed; the spade, the trowel, or the hand can do all that is wanted. As to planting, all good cultivators follow the digger, for the ground is always in best condition, either for planting or sowing, when it is newly turned over. Assuming that the arrangements as to colours have been made previously, the plants should be brought and placed beside the beds which they are to occupy, and the night before they are put out, or at least a few hours previously, they should be well watered, for it is an evil practice to plant them in a dry state. At the same time the roots should not be in a saturated condition, especially in the case of such plants as Alyssums, Lobelias, Verbenas, &c., which are generally propagated in boxes. If they be wet, the roots cannot be disentangled without injury; but when the soil about them is moderately dry, they shake out freely without injury. With pot-bound plants, it is enough usually to remove the crocks, liberate the bottom roots, and to break down the top edges of the ball a little, and plant, filling in the soil loosely, and pressing it with the hands at the neck of the plant to steady it; but all ramming should be avoided. Plants never take kindly to a bed that is tapped or beaten, and in the case of Calceolarias such a condition is simply ruin. In planting the latter, and indeed all boxed or pricked-out plants get them up first with good balls, keep the roots shaded from the sun and protected from the dry air, and plant them expeditiously but with care, making the holes large enough for the balls, that there may be no necessity for squeezing them down, which is often done by careless and inexperienced planters. Little harm accrues from burying a few of the bottom leaves of a Verbena or Calceolaria; for it insures their roots being well covered, and it is therefore better to err on the side of deep planting than otherwise. Many failures happen through the shallow planting of tender subjects. I plant thousands of Alyssums, Lobelias, and similar plants every year, just out of the cutting pots, without any soil whatever to their roots; but I do not simply scratch a hollow on the surface of the bed and place the roots in it, where they will be disturbed every time the bed is stirred, and roasted by the sun in dry weather. On the contrary, their feeding points are placed within reach of moisture at once, and out of danger from hoe-stirring. A deep slit is made in the soil with the trowel, and holding the soil back with the other hand, the operator drops the long roots into the hole perpendicularly, and, withdrawing the trowel, allows the soil to fall into its place again. In this way the most tender subjects, and those which usually do not succeed well when moved, may be transplanted successfully. It is only necessary to sow them in fine soil that will shake freely from the roots without damaging them, and to take care to drop them straight down into the holes in planting. Unless it is raining at the time, all newly put-out bedding plants should be watered as soon as planted, and watered copiously; and the day following, or as soon after as possible, the surface of the beds should be stirred with the hoe, or, in the case of shallow-planted subjects, with the hand. This prevents evaporation, and is next to mulching in that respect, and should never be neglected after artificial waterings, which have a tendency to make the surface of the soil cake and crack in dry weather. CHEF.



Rubus deliciosus.

A SHOWY WHITE-FLOWERED BRAMBLE.

(RUBUS DELICIOSUS.)

THOUGH rarely seen in gardens, this is one of the most striking of all early-flowering shrubs; it was originally discovered in 1822 by Dr. James, who found it on the Rocky Mountains, where it grows at considerable elevations. The plant was brought into cultivation in this country by Mr. Anderson-Henry, of Hay Lodge, Edinburgh, who raised it from North American seeds, the produce of which first bloomed in May, 1870. Our illustration was prepared from a bush of it 4 ft. high, in the Royal Botanic Gardens, Regent's Park, where we saw it in May last, bearing numerous large white flowers among serrated trilobate leaves. Its single Rose-like blossoms are succeeded by reddish-purple Blackberry-looking fruits, which have an agreeable flavour. The plant is perfectly hardy, and is well worth a place in every choice collection of flowering shrubs; its proper position, however, is unquestionably on the outskirts of plantations or in the wild garden. Like nearly all other species of Rubus it may be readily increased by means of root-cuttings. B.

Street Gardening.—Passing the other day through a crowded street at Boston, in Lincolnshire, I was agreeably surprised by observing what may be accomplished in street gardening. In front of a small house was a spot of greenery most pleasing to the eye; the size, about 24 ft. by 12 ft. A border, only about a yard wide, extended round the whole, edged with black tiles, over which curled a large-leaved marbled Golden Ivy. The centre of the ground was covered with ordinary red gravel. Close to the street railings was a long bed of Lilies of the Valley full of bloom, shedding their delicious odour for the benefit of passers-by. There were also shrubs, such as Berberis, Golden Holly, Golden Euonymus, and Cupressus, Ferns being underneath the windows. Within the edge of Ivy were Gentianella and Iberis sempervirens, clumps of Hepatica, Anemone apennina, and Muscari (the flowering, of course, over). In the corners were fine plants of Arum Dracunculus, and clumps of the graceful-habited Solomon's Seal, as green and fresh as if in the depths of a wood. There were also plants of Anemone japonica alba, Ranunculus aconitifolius (Fair Maids of France), Dielytra, and the pale blue Camassia and Scarlet Lychnis coming into flower. The border had also evidently been thickly studded with Tulips and Hyacinths. Nothing, however, looked crowded. I had almost forgotten to say that a small golden-edged Ivy climbed up the brick front, and the whole was shaded by two Lime trees growing in the central gravel plot. The effect in a dry, dusty street was unique.—D. H.

Cottage Gardens v. Shows.—In reference to this subject, allow me to offer a suggestion, founded on long observation, and which is now made in the hope that it may be considered by the many benevolent persons who, delighting in flowers, desire to encourage the same taste among their poorer neighbours. Judging from practical experience, I am of opinion that resident landlords who have influence in their neighbourhood would do much more good by giving small prizes to cottagers for improved culture in their gardens, both as regards vegetable produce and the display of hardy flowers, than by instituting flower shows, to which exhibits must be often carried a considerable distance, and at which persons receive prizes for one plant in a pot, or a nosegay of wild flowers, to obtain which Nature's gardens must have been robbed to a large extent, and their beauty impaired, destroying all prospect of increase by seed. Where this is the case, the gardens belonging to the successful candidates may not unfrequently be found very unworthy of reward, as it does not follow that the owner of one plant in a pot possesses a border of flowers, or a well-stocked plot of vegetables; but where the garden altogether is the object to be judged, emulation is excited, and one of the greatest benefits is obtained, viz., that of beautifying not only the separate homes of each individual, but adorning the whole locality in which they live, and enabling them by such competition to learn how to excel each other in friendly cultural rivalry.—C. [With these suggestions we wholly agree. Drawbacks and doubtful practices occur in connection with flower shows great and small. It is better in all ways to encourage good culture, good taste, and beautiful hardy flowers in small gardens, than to tempt their owners to compete at shows.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Christmas Roses Seeding.—I send you ripe seed-pods and a flower of Christmas Rose, which, judging from its size, and the large foliage of the plant, I am inclined to think is Helleborus maximus. I have two fine plants of it, planted in 1872, which this season have produced considerably over 100 blooms. When should the seed be sown?—Winton. [At once in pans in a frame facing the north.]

China Grass (Bœhmeria nivea).—Will you kindly inform me what is known of the China Grass, as it is termed, or Ramie Grass? Is it Urticaceous? —Peter Inchbald. [It is a hardy herbaceous plant in the neighbourhood of London, attaining a height of from 3 ft. to 4 ft.; further south it grows more freely, especially in warm, open soils. Still more suited to its wants is the climate of the south of France and the Channel Islands, the London climate not allowing the plant to attain its full growth. It belongs to the Order Urticaceæ, or Nettleworts.]

THE KITCHEN GARDEN.

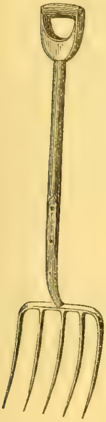
IMPLEMENTS FOR POTATO CULTURE.

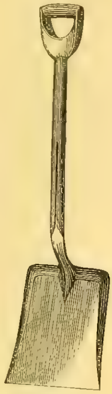
The popularity of the Potato as a subject for exhibition has naturally led to methods of improved culture, and this advance has been materially helped by the introduction of late years of the scarce and expensive American varieties, for the production of large crops from small and costly quantities could only be obtained by a high order of cultivation, and with it a much greater expenditure of time and labour than has commonly been bestowed upon this desirable esculent. Our American friends have also given us many useful and important hints with respect to their modes of culture, and, although generally from want of sufficient space and high rents we have hesitated to adopt the single-hill system so familiar to them, yet in the ridge system of cultivation we have a modification of it, and one more adapted to our insular practice and ideas. Still the great moving spirit of this anxiety for improved forms of culture has been a desire to produce fine exhibition tubers, it being a well-known fact that just in proportion as these are obtained so must the general crop be benefited. The negligent cultivator, who takes things in a hap-hazard fashion, is content to go on planting Potatoes after the same manner as his forefathers; and if his crop be half diseased or of inferior quality, he feels satisfied that he has done his best; but the Potato grower and exhibitor of the present day has learnt by his own experience, and from the teachings of his opponents, that if success be desired it must be earned, and that in no respect more thoroughly than in the necessary expenditure of labour involved in better cultivation. Year after year has shown that the ridge system is not only applicable to all kinds of soils but to all sorts of Potatoes, and that the apparent loss of crop consequent upon the wider space that must exist between the rows is more than compensated for by the extra produce, which is also of a finer quality, and, as a rule, less affected by disease. The ridge system requires that, for Potatoes having a short or medium haulm, the width between the rows should not be less than 3 ft., and for sorts having a tall or exceedingly robust haulm, from 3 ft. 6 in. to 4 ft.; and, wherever the soil is fairly good, and the seed tubers of picked quality, it will be found that this width is not excessive. One of the undoubted facts that recent discussion on the Potato disease has elicited, is that the rains wash the disease spores from off the foliage into the soil, and into contact with the young tubers, and by this means the tubers near the surface are most subject to the disease. When Potatoes are grown upon the ridge system, and the ridges are fully finished up in the summer, it will be found that as the haulm grows, by its own weight it falls aside into the furrows, leaving the top of the ridge somewhat exposed to the sun, therefore, when heavy rains come, the spores are washed into the furrows rather than on to the ridges, and the damage to the tubers is greatly lessened; moreover, the sharp pitch of the ridge prevents the entrance of much of the cold moisture, and the danger from disease is in this way considerably mitigated. The ridge system, indeed, presents so far the best practical embankment against the inroads of the disease.

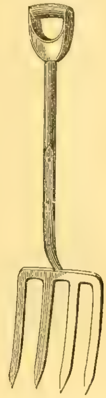
The grower's first work in preparing his soil for the reception of seed Potatoes should be to have it dressed in the autumn with slackened lime and soot. If this mixture be allowed to remain in the soil during the winter, its fertilising powers will greatly increase, and many dangerous insects will be effectually destroyed. If forked into the ground as early as possible after the preceding crop is cleared great advantages will accrue, and later on a moderate dressing of thoroughly decomposed stable manure should be applied, so that some of its rawness may be removed before the seed tubers are planted.

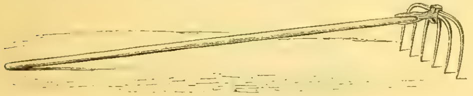
For the moving and distribution of manure, no implement that has come under my notice is more useful, lighter, and better adapted for its purpose than the one now illustrated as No. 1; it can be used during a long day's labour without producing weariness; indeed, its very elegance almost tempts one to use it.

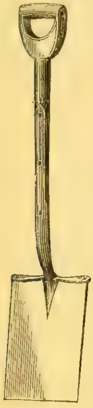
But manure, if short and well decomposed, needs also a shovel, to distribute it properly and make clean work. The implement illustrated as No. 2 has singularly good qualities; it is not only light and elegant, but it is of great strength, for instead of the handle being fastened to the hose or sheath by means of uncertain rivets, it has a stout centre worked into it after the manner of a cane-handled cricket-bat, and so bolted that any dislocation seems impossible. The manure being spread, the soil should be deeply dug, either throwing it into ridges of the desired width, or leaving it rough but on the flat, according to the taste of the cultivator. If, however, the plan be adopted of throwing it into ridges at once, it will be necessary to have a line and a rod, 3 ft. or 4 ft. in length, at either end. Strips of the width marked should then be dug up, the centre spit being turned first, and the side spits placed upon that; in this way the ground is not only thoroughly exposed to the frost, but is also lined out for planting in the spring.

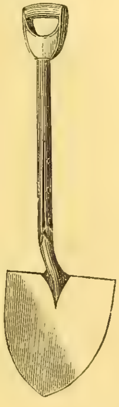

No. 1.
Manure fork.

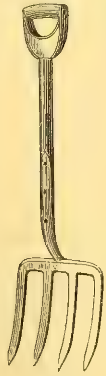

No. 2.
Manure shovel.


No. 3.
Flat-tined digging fork.


No. 6.—American prong hoe.

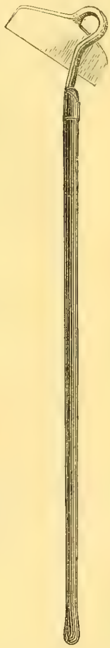

No. 4.
Sheath-handled spade.


No. 7.
Pointed shovel.


No. 8.
Potato digger.

The flat-tined digging-fork, shown as No. 3, is at the same time one of the strongest and yet most useful instruments for digging that I have seen, being equally useful for every description of soil, but especially for stiff loams; it works clean, and leaves but few crumbs behind. I find labourers in this locality evince a decided preference for this fork over any of the ordinary cast steel type.

Where the soil is very loose and ashy a good spade is almost indispensable. The one represented at No. 4 is light in construction yet strong, and has an iron sheath well up the handle. Assuming that the ground is left in ridges, the next step will be, at some favourable time during March, to fork up the furrows to a good depth, mixing some of the pulverised soil of the ridges with them, and even later on forking might be repeated with advantage, working in leaf-soil, wood-ashes, guano, or any similar manure, so as to keep the soil as light as possible. At planting time a line should be strained down the centre of the furrow, and a shallow drill drawn; in this the seed tubers are carefully placed, and covered up with the fine soil on either side; when convenient the ridges are forked down and levelled, and in this condition the ground remains until the haulm appears.


No. 5.
Crane-necked hoe.

Flat hoeing is an essential portion of Potato culture, as by it the ground is thoroughly cleared of weeds, and the surface is made ready for earthing. For this purpose the most suitable instrument is the crane-necked hoe, No. 5, which admits of the blade being worked well between the haulm without injury if the cultivator use but ordinary care; it is light and exceedingly useful, producing excellent results.

After the weeds are destroyed it is good practice before earthing to stir the soil well beween the rows to the depth of 3 in. or 4 in., either with the fork or the American prong hoe (No. 6), singularly light and elegant, made by Hexamer, of the United States. This hoe, as seen in the illustration, is composed of three double tines that pass through a steel socket at the end of the handle, and are fastened by means of a key. Its width is about 10 in., and this can be reduced to 6 in. by taking out the outer tines. It is a splendid implement for surface-stirring in light soils, and is equally useful as an earther when the haulm is sufficiently high.

With the ridge system it is necessary to earth up two or three times, the fork being used for the major portion of the labour, making a neat finish by throwing the crumbs to either side with the pointed shovel, No. 7, the sides of which are slightly incurved to admit of its making a rounded furrow. When this work is done the crop must remain untouched until ready for lifting.

No. 8 represents a specially constructed Potato digger, the tines being slightly bent to admit of the tubers being well and cleanly lifted out of the soil; and if the crop be good no labour can be more pleasant or profitable than Potato digging. The implements illustrated—with the exception of the prong hoe—are manufactured by Messrs. Parkes & Co., of Birmingham, whose steel forks have been long and favourably known.

A. D.

Endive for Spring Use.—Early spring is perhaps the most difficult season for supplying good salads when there is not much accommodation in the way of pits, &c., for sheltering half-hardy crops, as the late crops are over, and the early ones are not sufficiently forward to be of much assistance. One of the most useful crops that I have found for capability of enduring all weathers is late-sown Endive; it is usually sown here rather thinly, in drills 1 ft. apart, on a border of dry and moderately good soil about the last week in August. If the seedlings appear too thick to attain a reasonable size, they should be slightly thinned, but not transplanted, for the plants will be only about half-grown when winter arrives, and as soon as they commence to grow in spring the demand for them will necessitate the drawing out of the strongest in succession. Although easily injured by frost when fully grown, Endive during the first stages will resist frost as well as the hardiest Cabbage Lettuces. The sorts I grow are the Green Curled and Batavian. As a safeguard against the effects of excessive frost, a light covering of branches or old Asparagus tops is extremely useful, but thick coverings will do more harm than good.—James Groom, *Henham.*

Mushrooms on the Walls of Turf Pits.—Having noticed in your last issue an account, quoted from The Garden, of the singular Mushroom bed in Lord Londesborough's garden at Norbiton, I (Mr. Geo. Cooper, in "Derby Mercury") here ask to be allowed to give a few remarks as to my mode of growing them. In growing Mushrooms I have a still more profitable object in view, namely, to get a quantity of good frames in which to grow thousands of plants. I get a supply of turves all cut about 12 in. by 18 in., and 3 in. thick. I then use the rule and line, and form a ground plan of what is termed a cool pit for plants; these turves are placed one on the other till the required height is reached, say 2 ft. back wall and 1 ft. front wall, the ends to slope from back to front; I get my woodwork frame—just the wall plates and a few rafters across from back to front—then the lights to fit, which makes the frame complete. Every turf is placed the Grass downwards, except the top layer, which should be placed the Grass upwards. In building these pits I place in every layer of turf a quantity of Mushroom spawn, in pieces about the size of an egg, and about 9 in. apart in the rows, and about 3 in. from the inside edge of the frame; the heat of the sun upon the glass will give the pit a healthy moist atmosphere, and cause the Mushroom spawn to spread and produce quantities of Mushrooms from the turf walls. I cut Mushrooms as late as November last year, and I commenced cutting from the same pits a month ago. A pit neatly and properly built will last eight or ten years, and produce Mushrooms every season quite eight months out of twelve. I have four large pits, over 100 ft. long, now to be seen at my nursery, Rose Hill, Derby, with thousands of bedding and other plants in the same pits. These turf pits are cool and moist in summer for plants, and, being nearly a foot thick of turf, are much warmer for plants in winter than brickwork. When a new pit is well made and cut round with a turf edging knife, and the top Grass trimmed neatly, it looks better and more pleasing to the eye than bricks and mortar.

Leeks.—There is certainly an unfounded prejudice against this most useful vegetable, for when good Onions are obtainable, Leeks are at a discount, yet why this should be the case I am at a loss to discover, for this reason, that for many culinary purposes they are decidedly superior, added to which they are far less liable to be affected by insects or disease than Onions, for while the onion-fly and mildew frequently make sad havoc in Onion beds, the Leek only requires good rich soil to ensure an abundant crop. There are several varieties, but one is ample for even the largest garden. I have grown London Flag, Henry's Prize, and Musselburgh, and found them all good and prolific kinds. Sow at the end of February, and transplant as soon as large enough into trenches like Celery, or make large holes, into which drop the plants, together with a little soil to hold them firm, and fill up as growth progresses. Besides hoeing they require no further attention, and are fit for use any time during the winter; but, as before stated, it is late in the spring—when old Onions are comparatively worthless, and those sown in the autumn are not large enough for culinary use—that Leeks are most appreciated, as they continue in good condition until June, and, if taken up and laid in a cool place, even later.—J. Groom, *Henham.*

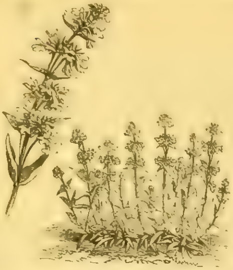
Radishes, Good and Bad.—It is odd that among the quantities of home-grown Radishes sent to our markets one never sees any of the young and tender samples common abroad; on the contrary, they are like little Turnips. If, however, private growers would accustom us to Radishes gathered at a proper age, and without the woolly fibre and roughness of flavour characteristic of the Radishes of the shops, perhaps we should in time see the market supplies improved.—V.

Market Gardens in San Francisco.—These are in the suburbs of San Francisco, and are in the hands of Chinamen, or of Italians who in this work compete successfully with the former, and the plots of ground of both races are marvels of careful husbandry. Wooden conduits, on trestles, carry the water raised by windmills from wells to every part of the garden; and the Chinaman, not content with this general irrigation, goes to every particular Cabbage and Lettuce, watering-pot in hand, and washes it as painstakingly as if it were a costly exotic. His reward is great in the size and healthiness of his vegetables.

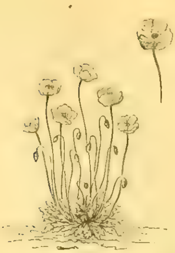
HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The noblest flowers of the week are the earliest forms of the German Irises, with great Orchid-like blossoms, growing freely on almost any soil. Among these, the finest is one called spectabilis, a variety of I. germanica, with dark and rich hues. The variegated forms, like I. Victorine, and the rich yellow and dark kinds are a little later in opening. The Narcissus-flowered Anemone is one of the kinds not usually placed among the very finest, but of late its character is better shown through the plants getting stronger, and the effect of the flowers during the past week was most pleasing and quite distinct in aspect from any other kind. The plant deserves a place in the choicest collection. The graceful-looking Hyacinthus amethystinus is still in great beauty, a most precious May border-flower. The Californian Delphinium nudicaule has been for some time a conspicuous flower in many gardens; the variety of this, called D. nudicaule elatius, is, as grown at Crowsley Park, a distinct improvement on the original form, excelling it in stature and brilliancy of colour. The transparent white blossoms of the St. Bruno's Lily (Anthericum Liliastrum) now adorn many gardens, and a fine companion plant to it, and somewhat like it in habit, is the handsome blue Quamash (Camassia esculenta), which is now becoming plentiful about London. It is noteworthy that the Ixias are now blossoming freely in the open ground in Barr's Nursery, where they have now remained two seasons undisturbed. The beds are raised a little above the level, and the soil is warm and well drained. There are so many bright hardy flowers appealing to us for notice now-a-days that our old friends the Aubrietias are almost forgotten. At Crowsley Park, however, the other day we were surprised to see an Aubrietia (A. Hendersoni) with almost the richness of one of the new Pansy-Violets. This kind is as great a gain as if it were a new species, it is so widely different from the usual forms of this fine rock plant, although it is itself but a variety, and we should say one of the best hardy plants ever sent out by Messrs. Henderson. The various Thrifts are very beautiful now; the white variety of the common Thrift is perhaps the most valuable of all, because its foliage is of such a fine fresh green in winter. The great Oriental Poppies are now in their most gorgeous dress, and they are certainly most effective objects in the garden, but they are among the kinds that may be easily overdone. An irregular group in the distance in the picturesque garden, or a few plants well placed on the margin of a shrubbery in the small garden, will suffice. The old and common way of dotting a plant all over the place because it happens to be a showy one must be given up if we desire to avoid weak, spotty, incoherent, and monotonous effects in the garden. Among the more uncommon flowers of the week we noticed the blue Lithospermum Gastoni at Crowsley Park; it seems a slow grower and dwarf, and therefore suited for the rock garden. Some of the species of Iris, such as I. subbiflora, are in bloom in Osborn's Nursery at Fulham, where rare bulbs and many other hardy plants of great merit, that are not common in gardens, may from time to time be found.

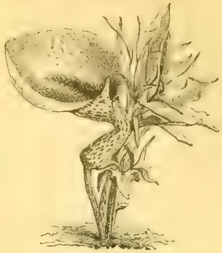
Cyclamen-leaved Anemone (Anemone palmata).



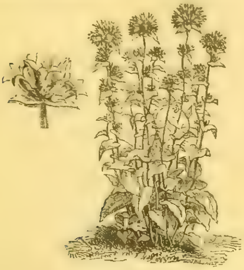
Whorled Pentstemon (Pentstemon procerus).



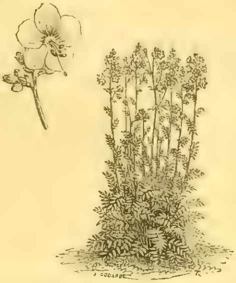
Golden Poppy (Papaver croceum).



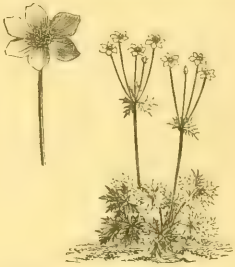
Dragon's Mouth (Arum crinitum).



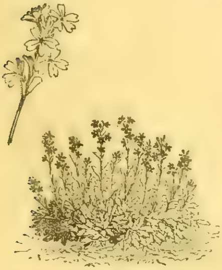
Clustered Campanula
(Campanula glomerata, var. speciosa).



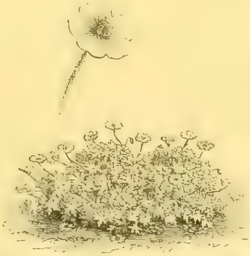
Jacob's Ladder (Polemonium cœruleum).



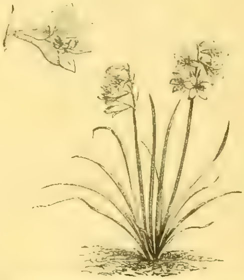
Narcissus-flowered Anemone (Anemone narcissiflora).



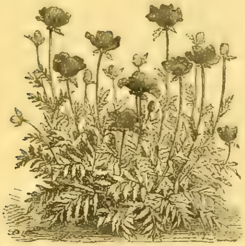
Alpine Erinus (Erinus alpinus).



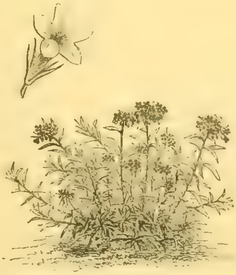
Rosy-red Geranium (Geranium lancastriense).



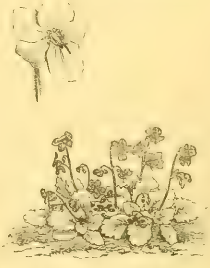
St. Bruno's Lily (Anthericum Liliastrum).



Eastern Poppy (Papaver bracteatum).



Creeping Gromwell (Lithospermum purpureo-cœruleum).



Rosette Mullein (Ramondia pyrenaica).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

THE FRUIT GARDEN.

PEACH CULTURE NEAR THE SEA.

A correspondent asks (see p. 496) for information respecting outdoor Peaches near the sea-coast, and as the gardens here are within three miles of nearly the most eastern point of East Suffolk, we experience the evil effects of cutting winds as much as in any other part of the kingdom; in fact, they are much more disastrous to spring growth than frost. In the few places where Peach culture is attempted close to this coast the past month has been most disastrous, not only to Peach trees, but also to much hardier-foliaged trees, for when exposed to the full force of the gales Rose-bushes, and Pear and other wall trees become withered as if a scorching flame had passed over them, owing to the persistency with which the wind has blown from the sea. We are, however, well protected on all sides by means of lofty trees, and as regards general health and regularity of cropping two long walls here devoted to Peach and Nectarine culture will, I think, bear favourable comparison with walls furnished with the same kinds of fruits in the southern or western counties. Like your correspondent, I believe that not only gumming, but that many of the ills to which Peach trees are liable are due to atmospheric influence; for, although we get here such ungenial springs we generally get dry autumns; therefore, although the annual growth is not so luxuriant as in the milder western counties, we can safely rely on getting it thoroughly matured, a point of the greatest possible importance in Peach culture, whereas the soft mild air of the south and west induces late growth, and when the wood is over-strong and but indifferently ripened frosts greatly affect the trees, bursting their sap-vessels and considerably impairing their general health. As regards the system which we adopt, I have only to say that we train the wood close to the wall in the old-fashioned way, with nails and shreds. Our trees are all fan-trained, and each covers from 20 ft. to 30 ft. of a 12-ft. high wall. The alleys, which are 3 ft. wide, are mulched at this season, and while the fruit is swelling, copious supplies of water and of liquid manure, if the crop be heavy, are given, but as the fruit begins to ripen, these are withheld. Covering and uncovering are strictly attended to until the trees are well clothed with foliage and all danger from frost is over. The principal point is to get the current year's wood into good growing condition as soon as possible by paying early attention to disbudding, picking off all blistered leaves, and washing the trees with soap-suds and clear water by means of the garden engine. The young growths should be trained in moderately thin, so that every leaf may get the full benefit of the light, and the fruit should be thinned by degrees. We never stop the annual growth, except in the case of a gross shoot that is robbing the others, and if there be a weaker shoot to fill the vacancy, we cut the over-luxuriant branch out altogether. Even after one of the most trying springs on record, we have now such heavy crops of both Peaches and Nectarines on open walls, that plenty of thinning is still required. J. Groom.

Henham Hall, Suffolk.

FUNGI AND FRUIT DISEASES.

Fire Blight in the Pear.

That this is of fungoid origin is now clear from the researches of Dr. J. Gibbons Hunt, President of the Biological Section of the Academy of Natural Sciences of Philadelphia, an excellent botanist, and one well skilled in microscopy. He finds that a very minute fungus germinates on the outer bark, enters the structure, destroying the cells as it goes, till it reaches the alburnum, and then it penetrates right to the pith by way of the medullary rays, totally destroying the branch from centre to circumference. Dr. Hunt was not one of those who believe much in fungoid diseases. Indeed, if he really had any prejudice at all, he was impressed with a presumption that the fungus found in Pear blight was but a follower of diseases. But there is no other conclusion than that arrived at by him, viz., that in the true fire blight fungi are the cause of the disease. The fire blight attacked large branches, destroying them rapidly, because all connection with sap-collecting roots was cut off; but there were numerous diseases of the Pear similar to fire blight, although not so destructive, because the fungus did not penetrate sufficiently deep to sever all connection with the roots. It may be that fungi causing these appearances are forms of the other fungus, for it is now known that many characters are assumed at various stages of growth by these little plants which we know as fungi. One of these diseases appears as a sort of bark scaling at a period anterior to that when the Pear becomes naturally rough-barked, which is not till its twelfth year. This does not penetrate deeply enough to affect seriously the inner bark. Still that it has a bad effect on health is apparent from the fact that trees with it have their leaves turn a red or brown colour early in the autumn, showing that their nutrition has not been perfect. Another form attacks the green bark of five or six-year-old branches, making dead patches of an inch or more surrounded by the healthy green bark. Where the destruction terminates there is a separation, and the appearance is just as if the irregular patch had been marked by the edge of a knife. Still another form seems to confine itself to the spurs; it eats out the structure at the junction with the main branch, and gives the tree a peculiar appearance—dead leaves and spurs everywhere, while the main shoots and branches are as healthy as they can possibly be.

Cracking in the Pear

was also often caused by a fungus. I have had no chance to get the case I am now about to refer to microscopically examined, but there are some attendant phenomena which stamp it as clearly of fungoid origin. Early in summer, the leaves still appearing quite healthy, pale spots may be noticed in the leaves when held up to the light. There is some change going on in the cellular matter. It soon dies, and there are black spots on the leaves. The leaves are fully expanded by this time, and the disease remains as black spots. Now the fruit we call a Pear is, morphologically, but a bundle of leaves. The germ of the disease is therefore as early in the fruit as in the leaves. It develops in the growing fruit at the same time as it is developing in the leaves; it destroys the cuticle just in the same way. But the fruit is different from the leaf; it keeps growing on; the dead portions cannot grow, and so there is no alternative but to crack. There are of course other causes that are not fungoid which lead to cracked fruit. He had seen Beurré Giffard crack through to the core, it seemed almost in a single night, but the peculiar form of cracking he referred to certainly came from the destruction of the cuticle in spots, by what had all the appearance of minute fungi. There was yet another fungoid disease, known as the leaf blight, and this was particularly troublesome to the raiser of seedling Pears in places where the land was liable to get very warm in the summer. The little fungus was easily seen under a common pocket lens, and very beautiful it was. When mature it was like a miniature volcano, with the crater beautifully fringed around the outer edge. I believe this is one of the stages or forms of Ræstelia cancellata, and I think it will only germinate so as to be in the injurious condition we find it, when the thermometer under ground rises above 75°. At any rate, if we sow Pear seeds among Wheat, among Apples, or other strong growing plants, under a little brushwood—or under a shaded hot-bed sash—or in any place where the ground does not get very hot, this fungus does not prove troublesome.

Apple Blight.

The fungoid diseases of the Apple have not hitherto proved very troublesome, but there is one which is evidently allied to that which causes fire blight in the Pear, only that it appears to confine itself to the one or two-year-old branches, instead of those of more advanced age. It is of western origin. I saw it first in Illinois about ten years ago, and though I have travelled extensively over most of the country, I am pretty sure that it had not crossed the Alleghanies at that time. Since then it has gradually made its way eastward, and in 1874 I saw it for the first time in Southern Maryland. So far I have not seen any in Pennsylvania. This season at Windsor, Canada, I saw an orchard suffering as badly as any Pear orchard, and with all the symptoms of true fire blight, large as well as small branches suffering alike. In the same orchard also was some spur blight as before described among Pears. I have little doubt these are all forms of the same fungoid development, and the same in the Apple as in the Pear.

Peach Yellows.

In the Peach the worst form is that which produces the disease known as the yellows, and here I would again remark that we must not look to one cause alone as producing disease. That a fungus will produce the yellows I am satisfied, but I am by no means satisfied that all Peach trees with the yellows are so diseased through fungoid agency. I was first led to suspect that fungi would cause yellows by having some White Spruces growing on a piece of land where some English Alders had been grubbed out. Fungi grew on the decaying Alder roots, and spread to the roots of the Spruces, and in all these cases the plants assumed a golden sickly hue. The ground dug up about them had a Mushroomy smell, and with a lens the Spruce roots could be seen in the snake-like folds of a thready fungus, and all the young fibres so attacked died, leaving only the coarser roots alive to do all the active work. Some shovels full of this earth placed at the roots of the Norway Spruces produced the following year the same yellow sickly tint in them, and I have some of them left yet to show to my friends as examples of their destructive effects. Since then I have dug up around the roots of Peaches with the yellows and have found a thready fungus, Mushroomy smell, and dead fibres, just as in the diseased Spruces. Of course other things as well as fungus must produce a disease like this. If a plant be growing on wet ground the young fibres rot and the leaves become yellow; or where the trees do not rot, but the ground is poor, then also is there a yellow tint. In the one case the plant cannot eat, in the other there is nothing to eat; the yellow tint is alike in both, but in the case of the fungoid attack the element of the fungus is apt to pervade all the plant's system, even to penetrating the buds and seeds, so that it may be propagated and carried to distant localities.

Grape and Gooseberry Mildew.

It is much with the Grape as with other fruits, fungi are sometimes the cause as well as often the consequence of disease. There is no doubt whatever that anything that will injure the roots of a Vine, whether it be Phylloxera, over-dampness, extra-richness, or other causes, will result in fungoid diseases to perhaps both fruit and Vine, but the labours of intelligent men in the matter of the Vine mildew leave no doubt that Vines in every way healthy can fall a prey to this destructive pest when it once gets fully under way. I cannot go over the whole ground of fungi and fruits, but will just refer very briefly to the mildew on the Gooseberry. This attacked certainly healthy trees, though, like the leaf blight on seedling Pears, it never was troublesome, except where the soil was heated to a higher temperature than 75°. If corn-stalks, stones, or even old boots and shoes, as I have seen, be piled up under a Gooseberry bush, so as to keep the soil cool, it will never mildew. I think that the few facts which I have given prove that fungi are often the cause as well as the concomitants of fruit diseases.

Discussion.

Mr. C. M. Hovey remarked that Mr. Meehan had somewhere said that fungi liked to grow in cool moist places, but he now seemed to say that they only grew where the temperature was over 75°. How could these conflictions be reconciled? Mr. Meehan replied by asserting that there were different species among fungi, and just as some flowering plants lived in the arctics and some in the tropics, so did different fungi seek different temperatures for their development. Mr. C. M. Hovey further said that fungi had nothing to do with Pear cracking. He had been a cultivator of the Pear for over forty years, and he had noticed that when there was an extra wet season, while the fruit was swelling, cracking prevailed to a greater extent than under any other circumstances; and the reason of this was plain—the roots continued to absorb moisture when, by the peculiar condition of the atmosphere, there was little evaporation going on, and thus more moisture was drawn into the plant's system than the plant required, the tissue then became distended and had to burst. It was then that fungi followed, and they were therefore the followers of diseased conditions and not the cause. He would say that cracking in the Pear was due to unfavourable climatic conditions, with which fungi had nothing to do. Mr. Meehan replied that he thought he had already made allowances for such cases as Mr. Hovey alluded to. The only difference between himself and his friend was that while he thought there were many causes of cracking and other diseased appearances, Mr. Hovey seemed to think there could be but one. We knew both had nearly the same result, and so a crack in a Pear would sometimes precede disease from perhaps climatic causes, while at others, as he had already shown, the fungus preceded and caused the disease. In regard to the young Pear fruit absorbing more water than it could hold as a cause of cracking, Mr. Meehan said, it was pretty as a theory, but rather an improbable one. Mr. Hovey's Pears might possibly burst if nature attempted to put its quart of sap into a pint of Pear, but then it is necessary to know that nature really does attempt these impossible things. Mr. Harrison stated that he had known of fruit of the White Doyenné which had commenced to crack before fully grown being made to ripen free from all blemish, by the application of a heavy dressing of ashes as soon as the fruit began to crack. Mr. Sylvester, who has paid great attention to all matters connected with fruit culture, said he had failed to be successful in a like experiment.—Thomas Meehan, in "Proceedings of American Pomological Society."

Early Grapes in Pots.—These are now greatly appreciated on the dessert table, and therefore we should exert ourselves to supply them. Some assert that to start pot Vines early in the autumn is a disadvantage, which it certainly is if the Vines have not been thoroughly ripened and prepared for the work beforehand by starting them early and getting them well matured by the middle of August, in order that they may be placed behind some sheltered wall with a north aspect. This gives stamina both to fruit and foliage, and the buds are more easily excited into growth by heat and moisture than they otherwise would be. Pot Vines, when started early, should be plunged in a bed of fermenting material, watching carefully that the heat does not exceed 85°, or otherwise it does more harm than good, by weakening the roots instead of strengthening them. Growing Vines in pots saves the permanent Vines, and although the fruit may not be so large as that on established rods, still good average produce ought to be obtained from Vines in pots, and they can afterwards be thrown away and young ones raised every year.—James Smith, *Waterdale.*

Raspberries and their Culture.—Can any one say whether the old-fashioned Raspberry called the Antwerp fifty years ago is in existence or not? I am aware that the name Antwerp Raspberry is still recognised, but if I am to judge by the fruit seen under that name it may truly be said that it is not that of the old Antwerp, which was very large and conical, and equally good in white and red, but the most delicate flavour was that of the white kind; otherwise they were equal as regards size, the clean manner in which they grew, the abundant crops which they produced, and the desirable peculiarity of slipping off the foot-stalk when gently gathered without the slightest escape of juice or adhesion of the fruit to the centre. What is the best method of obtaining plentiful crops of Raspberries?—Ll. [The red and yellow Antwerp are still grown under these names, and may be procured from any good fruit nursery. Whether they are the old Antwerp varieties about which your correspondent inquires I am unable to decide, but they have been both superseded by other sorts, such as the Fastolf, Prince of Wales, and Carter's Prolific. I never heard of a white Antwerp Raspberry being in cultivation, but there is a sweet yellow Antwerp grown, which may be the variety alluded to as having such a delicate flavour. The most certain mode of growing good crops of Raspberries is planting them in soils made very rich with rotten manure, and as the plants are surface-rooters they ought never to be dug near with the spade which destroys their fibres. They should, however, be top-dressed every year with litter and well-watered during spring or summer droughts before the fruit is ripe.—T.]

Apricots as Standards.—Hitherto the cultivation of Apricot as standards has been of rare occurrence, even in the southern counties, where the fruit is apt to be deteriorated in quality when grown on south walls, and rarely attains that luscious richness of flavour which fruit obtained from standards generally possesses. Why, then, are bush or standard Apricots not more generally grown in favourable localities? The soil best suited to the Apricot is a calcareous loam or sand, of sound texture, 2 ft. deep. It is of primary importance in preparing the sites for standard trees that the subsoil should be perfectly drained and the position slightly raised so as to elevate the stems above the ground-level. This will be found indispensable to success in places where the ground is at all wet. Moreover, the digging of the surface anywhere near the tree should be studiously avoided, as not only does such a practice destroy the surface-roots, but, more particularly in the case of standard trees, it has a tendency to retard fructification. Some of the finest and healthiest trees I have seen have had their roots wholly under gravel walks. Rich, deep clay soils are to be avoided, as they induce vigorous growth and imperfectly-ripened wood, the principal cause of the unfruitfulness often complained of in Apricot trees. When such soils have to be dealt with, a large percentage of old mortar rubbish may be added to them with the best results.—G. Westland.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Rust on Grapes.—My Grapes are about the size of Peas and affected with rust: what can I do to get rid of it?—F. H. [Nothing will remove rust when once it gets on Grapes; try to find out the cause of it and endeavour to prevent its occurrence in future.—J. S.]

Early Ascot Frontignan Grape.—This Grape, of which a description and plate were given in The Garden last February (see p. 180), received a first-class certificate at a horticultural exhibition at Reading on the 18th inst. The specimen in question had been grown in an early Vinery with the Black Hamburgh, and was some days earlier in ripening than that variety. The bunches were medium sized, and well furnished with attractive-looking plump berries, which had a rich Frontignan flavour.—W. N.

PLATE XXIII.

THE LADY'S SLIPPERS OR CYPRIPEDIUMS.

(WITH A COLOURED FIGURE OF CYPRIPEDIUM NIVEUM).

Drawn by H. NOEL HUMPHREYS.

Of the different species belonging to this genus, all, both hardy and tender, are favourite garden plants. They are widely distributed in both hemispheres, and in all kinds of climates, from the north of Europe, and North and South America, to Japan, India, Borneo, Java, and the Philippines. In the whole family of Orchids, there is perhaps no other genus which has a wider range. Botanically, Cypripediums are distinguished by their having two fully-developed anthers, and the lateral sepals connate, or fused together, there being only one solitary exception in C. arietinum, whilst popularly they are readily known by their slipper-shaped lip. One tolerably well-marked section, all the species belonging to which being tropical American, has been made by the younger Reichenbach a separate genus—Selenipedium—but in the following remarks I have grouped all the species under the older and better-known name of Cypripedium. The different species of Cypripediums are nearly as diverse in habit and mode of growth as they are in their geographical distribution; all the hardy, and some of the tropical American tender kinds, are strictly terrestrial; others have been found clinging to the face of sunny limestone rocks in Moulmein and Burmah, while C. Lowii belongs to a group which is strictly epiphytal. The culture of all the tender species is by no means difficult, but that of the hardy North American and Siberian kinds is just the reverse, and many have failed to get such plants to bloom, except during the first season after they have been imported. The best results have been obtained with C. spectabile, C. humile, and C. pubescens, while Messrs. Backhouse have succeeded in flowering the rare and beautiful C. guttatum and C. Irapeanum in their nursery at York, where a broad patch of the only British species, C. calceolus, also does well on rock-work.

Propagation.

All the species are stemless herbs, and are readily propagated by dividing strong established masses; such off-shoots soon make blooming plants. Several beautiful new hybrids have been raised by Mr. Dominy and Mr. Seden in the Royal Exotic Nursery, at Chelsea, and also by Mr. Cross, gardener to Lady Ashburton, at Melchet Park, in Hampshire, after whom one of the hybrids is named. Other cultivators, including Mr. Pilcher, gardener to Sigismund Rucker, Esq., at Wandsworth, have raised seedlings from the chaste little C. Schlimii, but these are said to vary but little from the parent plant. In order to obtain seed it is necessary to fertilise the stigmatic surface of one flower with the glutinous or honey-like pollen from another flower of the same plant, or from a separate species, if a hybrid be desired. The stigmatic surface in this genus is concealed by the infolded margins of the lip, and is, generally, a thick trowel-shaped ivory-like process just below the broad shield-like sterile anther, or staminode. Press down the lip and apply the pollen to the under side with the point of a pencil, or a quill tooth-pick will serve admirably for this purpose. The seed resembles fine mahogany sawdust, and should be sown as soon as ripe on the surface of living Sphagnum Moss that has become thoroughly established on the surface of a pot of fibrous peat; cover partially with a bell-glass, tilting it at the bottom so as to allow a free circulation of air. This last precaution is especially necessary just when the young seedlings make their appearance, as that is the most critical period of their growth, and many thousands of seedling Orchids never get beyond that stage. As the seedlings develop themselves they may be removed and potted off separately, and treated as recommended for established plants.

Culture of Tender Species.

These should be potted in a fresh open compost, consisting of fibrous peat broken with the fingers into lumps about the size of pigeons' eggs; to this add about one-fifth of either dried horse or cow manure, which should be collected in pastures in summer when dry and laid on a hot flue long enough to kill all insect life that it might contain. A little turfy loam may also be added in the case of the most robust-growing species, adding sufficient coarse well-washed sand or grit to keep the whole porous. The pots or pans in which the plants are to be put should be well washed and thoroughly dried before they are used, and this remark also applies to the crocks employed for drainage. Cypripediums do not require so much drainage as many other Orchids; indeed, about one-third the depth of the pot or pan will be amply sufficient for them. Place a thin layer of fresh Moss, or the rough fibre from peat, over the crocks so as to prevent the particles of compost being washed down among the drainage. The collar of the plants may be about level with the rim of the pot, and the compost should be neatly surfaced with fresh Sphagnum, which should be kept regularly sprinkled with spray from a syringe, so as to induce it to grow as freely as possible. All the species require a copious supply of moisture when growing, both overhead and at the root, and they should never be allowed to become dry, as they, like many other stemless Orchids, have no decided season of rest. During the spring, summer, and autumn months they should all be regularly syringed morning and evening; and, in exceptionally hot dry weather, a gentle dewing in the middle of the day will induce that healthy vigour and fresh succulent growth so pleasing to the eye of the practical cultivator. They should be shaded carefully from hot sunshine, and free ventilation is essential, care being taken to guard the more tender species from cold cutting draughts. All these plants are more or less liable to be attacked by insect-pests, especially if out of health through any irregularity in their treatment. Thrips, red spider, and the yellow aphides peculiar to Orchid-houses must all be guarded against by means of a liberal use of the syringe and abundance of fresh air. If, however, thrips and fly have obtained a foothold, eradicate them at once by repeated fumigations with Tobacco-cloth or rag. It is better to fumigate gently on two or three successive evenings than run the risk of burning the foliage by filling the house to full of hot smoke. If the plants be gently sponged over occasionally with clean tepid water, it will do much towards keeping them free from dust and insects. Some recommend the use of weak liquid-manure when the plants are making their growth, but beginners had better avoid such applications. Many of the species grow well in a moderately warm greenhouse temperature or in a Cattleya-house, but C. Stonei, C. lævigatum, C. concolor, C. niveum, and one or two others, do best in the warm, moist atmosphere of a stove or East India house. The pretty little C. Schlimmii does best in a cool house with Disas and Odontoglots, and requires careful attention to prevent its suffering from thrips, which seem to have a special liking for its fresh succulent foliage.

Descriptive List of Select Kinds.

Handsome Lady's Slipper (Cypripedium venustum).—This is an old and well-known plant, with handsome foliage and rather showy green and purple flowers, which are copiously produced during the autumn and winter months. The flowers are nearly as large as those of the Bearded Lady's Slipper, but different in the foliage; and the lip is bronzy-green, not deep purple, as in the last-named plant. Close examination of the leaves shows them to be covered with a superposed layer of air-cells, and these give to the foliage a rather glaucous tint. It appears to like a tolerable degree of warmth; but I have seen creditable plants grown under ordinary greenhouse treatment. The sepals are white, or pale green, striped with darker lines at the base; and the spreading petals are olive-green at the base, having purple apices. They are fringed by rather long black hairs, and have a few black spots over their surface. It is an easily-grown plant, that should be in every collection of greenhouse or stove exotics. It is a native of the East Indies.

C. venustum var. spectabile is a very distinct and bright-coloured form, although very rare. There is an excellent coloured figure in Vol. II. of "Warner's Select Orchidaceous Plants," t. 24.

C. pardinum is a distinct variety of this plant, characterised by its broader foliage, having paler blotches of purple behind, and in the toe of the slipper being peculiarly obtuse or blunt. It often bears two, and more rarely three, flowers on a scape, the colours being similar to those of the normal form.

Self-coloured Lady's Slipper (C. concolor).—This is a small, but very distinct and interesting species. The flowers, which are of a clear sulphur-yellow throughout, sparingly dotted with brown, are

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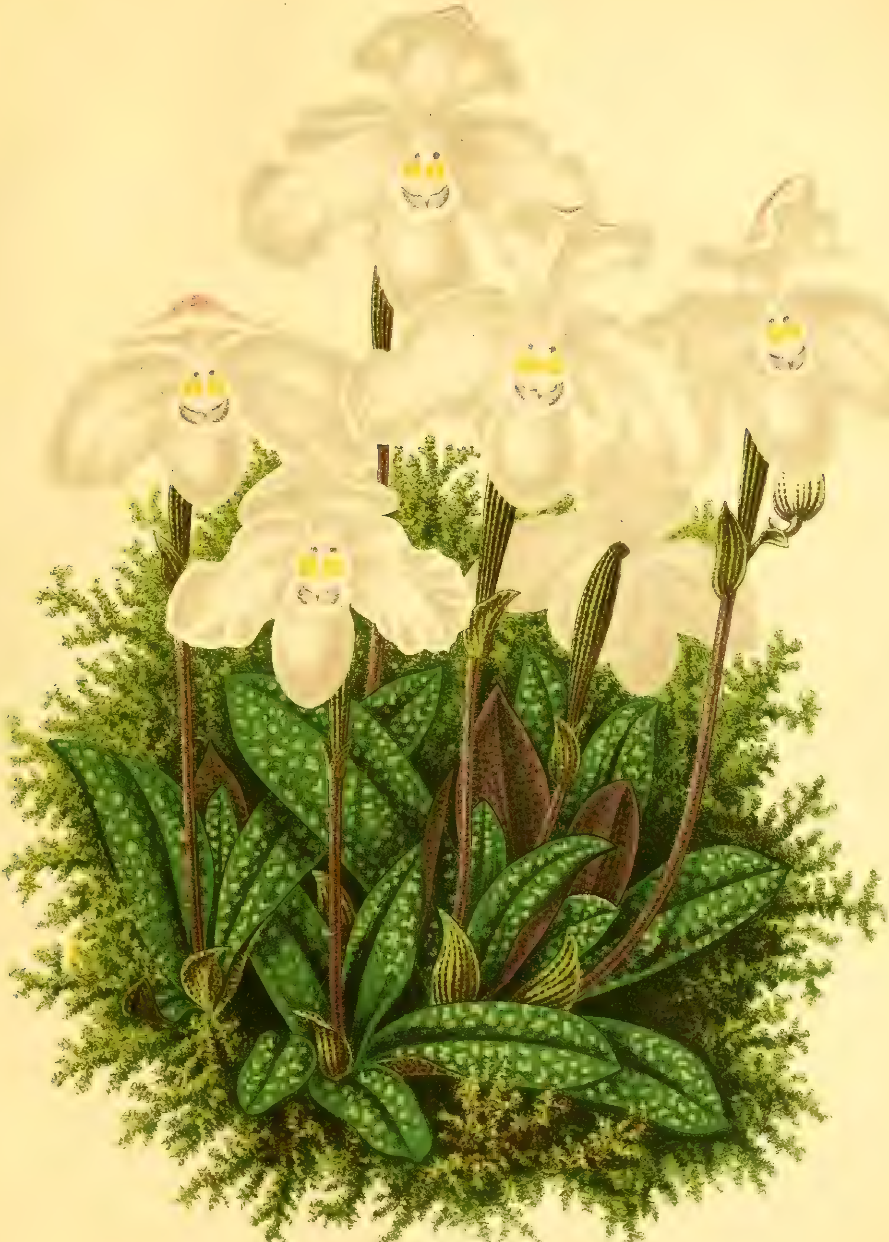


WHITE LADY'S SLIPPER (CYPRIPEDIUM NIVEUM)

borne on one or two flowered scapes from 2 in. to 5 in. in height, the flowers themselves being 2 in. or 3 in. across. It grows best in a warm moist stove or East Indian house, planted in a shallow pan of fibrous peat and lumps of sand or limestone rock. It flowers nearly continually when well grown, and requires plenty of moisture during the summer months. In winter water very carefully, as it is inclined to rot off at the crown. The plant was discovered by the Rev. C. Parish on limestone rocks in Burmah. It is also a native of Moulmein, where, according to Colonel Benson, it is found on the exposed face of limestone rocks, under a burning sun for a considerable portion of the year.

Snow-white Lady's Slipper (C. niveum).—This is a little gem, and a general favourite wherever it is grown. In habit, it is so near the last that Mr. Ellis, who obtained many of the first plants introduced, mistook it for C. concolor until it flowered. The foliage is, however, a little longer, and rather deeper in colour; the flowers are borne on one or two flowered scapes, which vary from 3 in. to 6 in. in height, sometimes even higher; the sepals are white in front, suffused with delicate rose-flesh at the base, which gives them a charming opaline appearance, and at the back they are suffused with green, and blotched with dull purple; the sepals are pure white, nearly 2 in. long, and are dotted at the base with purple; lip oblong, slightly pointed, not unlike a wren's egg, but larger, pure white, with minute purple dots. Like the last, it luxuriates best in a warm, moist atmosphere, and thorough drainage at the root. Different individuals of this pretty little plant vary considerably in the form of the lip, some having the lip tapering and bluntly pointed, as in C. concolor; while others have it rounded, something like C. Schlimii. It so nearly resembles C. concolor in all its parts, that I am inclined to think it is best considered as but a white form of that species.

Javanese Lady's Slipper (C. javanicum).—This is a small species of the C. barbatum type, having variegated foliage and solitary dingy green and purple flowers on a long, slender, purplish scape. It grows, well treated, like C. barbatum, and flowers during the winter months; its flowers, like all the others in this group, being very permanent in character. Although not showy, the plant is worth adding to a collection of these plants for variety. It is a native of Java and other islands in the Indian Archipelago.

Bearded Lady's Slipper (C. barbatum).—This is one of the best known and most generally cultivated of all the species. It is a most vigorous and free-flowering plant that may be had in bloom all throughout the year with but little trouble. The foliage is of a pleasing green colour, with darker blotches and lines, the flowers being borne on long deep purple or chocolate-tinted scapes, 6 in. to 15 in. in height. The upper sepal is fully expanded, clear white at the apex, its lower half being striped with deep purple and bright green. The petals are spreading, and are of a bright purplish tint, ciliated along their edges, and characterised by bright, hairy, black glands along their upper margins. The lip is quite an inch in width in good varieties, and of a deep claret-purple, with deeper veins. This is one of the most variable plants in the whole group, the typical form being somewhat caulescent in character, with very small and poorly-coloured flowers. The best known variety in cultivation, and one of the most popular for show purposes, is C. barbatum nigrum, or, as it is sometimes called, superbum. Another form, which bears two flowers on a scape, is named C. barbatum biflorum. C. Crossii is another very distinct form, and rather rare. Strictly speaking, C. Veitchii (superbiens) and C. Dayii may be referred to this species, and all the numerous forms are easily recognised by the peculiar marginal glands on the petals, and the shape of the green staminode. The plant, being robust, readily adapts itself to very diverse modes of treatment. It grows well in turfy loam, peat, and dried cow-manure in shallow pans or pots, and, when well-grown, makes a fine exhibition plant. For the latter purpose it is a usual practice to grow the plants in small pots, and arrange those that bloom best in a large pan when in flower. Grouped in this way, and neatly surfaced with fresh Moss, they have a fine effect in the eyes of ordinary floral critics, although they look stiff and formal to the artist. The plant is a native of Mount Ophir, a locality very interesting, as being the habitat of a beautiful, but, as yet, unintroduced Fern (Matonia pectinata).

Eye-like Spotted Lady's Slipper (C. Argus).—In habit this plant resembles C. barbatum, but the flowers are borne on taller scapes, the latter varying from 12 in. to 18 in. in height. The flowers are about the same size as in C. barbatum; sepals, white, streaked with green lines, as in C. venustum; petals, curved, as in C. Fairieanum and × C. vexillarium, oblong, marked with green lines, and profusely spotted or blotched with deep purple eye-like markings; each petal has about seven large shining hairy glands along its upper margin, a character which shows its close relation to the bearded Lady Slipper in a marked degree. The blunt apices of the petals are suffused with purple as in C. venustum. Lip like that of C. barbatum in form, but veined with green on a bronze-coloured ground, as in C. venustum. It is a distinct and handsome plant, growing and flowering very freely in the winter and spring treated like its congeners. It was introduced by Messrs. Veitch, and first exhibited in December, 1873. It is a native of the Philippines, and may be a natural hybrid. Mr. Bateman suggests that C. barbatum and C. venustum are the parents, and in this opinion I fully agree.

Purplish-flowered Lady's Slipper (C. purpuratum).—This, at first sight, so closely resembles C. barbatum, that it is not unfrequently so named in gardens and nurseries. It is, however, very distinct, and characterised by the absence of marginal hairy glands, and by having the margins of the acute dorsal sepal or standard very distinctly revolute. It is an old species, seldom seen in modern collections, although I have noted it flowering annually in the Kew collection for several successive years. It blooms during the winter months, and lasts for fully a month or six weeks in perfection. It sometimes, though rarely, bears two flowers on a scape.

Lady Hooker's Lady Slipper (C. Hookeriæ).—This, although not remarkable for the beauty of its flowers, is a handsome plant, well worth growing as a foliage plant, its broad green foliage being conspicuously marked with silvery grey. Each leaf is from 4 in. to 6 in. long by about 2½ in. in width. The flowers are borne singly on scapes 12 in. to 16 in. length; sepals, ovate, of a greenish-yellow colour; petals, 2 in. to 3 in. long; spathulate, green at the base, and of a lively purple colour at their apices, the petals are spotted with purple or brown about the centre; lip, more or less swollen, of a greenish-purple colour; staminode, oblong, greenish. This is the best of all the variegated kinds, and good varieties bear really handsome flowers, while others are very dingy. C. Bullenii is a variety of this plant. Like all the other tropical species it likes plenty of subdued light and a warm, moist atmosphere. This species and C. Fairieanum are subject to the attacks of thrips and red spider if irregularly treated, and these soon spoil their beauty and give them an unseemly, rusty appearance. Genial warmth, fresh air, and moisture will do much to keep these pests in abeyance, especially if the syringe be freely used at the same time. It is a native of Borneo and the Malayan Archipelago.

Superb Lady's Slipper (C. superbiens).—Although nothing more than a fine form of the Bearded Lady's Slipper, this is at the same time so distinct and beautiful, that for all garden purposes it merits a distinct title. The plant is easily recognised, even when not in flower, by its bright yellowish-green darkly-blotched foliage. Its flowers are large and solitary, borne on stout scapes, 12 in. to 14 in. high. The upper sepal is broadly egg-shaped, of a greenish shade at the base, softening into white at the tip, and streaked with deep green, convergent lines. Petals, 3 in. to 3½ in. long, nearly an inch broad, strap-shaped, rather blunt at their points, and deflexed at an angle of about 45°. The petals are white, shading into green at the base, the apices being tinted with rose. The petals are spotted throughout with deep purple, something in the way of C. argus: but here the markings are smaller and the segments larger. The lip is large, inflated at the mouth, tapering in graceful curves to a blunt point, being of a dull purplish-brown colour, veined with green at the sides. The stamina is lumulate, with a tooth on each side below, It likes a very warm, humid atmosphere, and a fresh, open compost. and appears to grow nearly all the year, so that it should not want for moisture at any time. It is a native of Java, often called C. Veitchii in gardens.

Mr. John Day's Lady's Slipper (C. Dayanum).—This is another fine and distinctive form of the ubiquitous C. barbatum, and as one of the most effective of its class should find a place in the most select collection. In form the flower reminds one of C. superbiens, but it is easily distinguished from that form by the dorsal sepal being narrower and more sharply pointed; the petals are longer and more spreading, and are not spotted. The upper segment is ovate, pale yellowish-white, streaked with green; petals, 3 in. to 4 in. in length, white at the tips, pale green at the base, streaked with interrupted brownish-purple lines. Lips very large and wide at the mouth, gradually curving to a bluntish point, as in C. superbiens, the colour being purplish-brown, margined with a shade of green. Foliage, light green, blotched irregularly with a darker shade. It has a tolerably free habit, and requires a warm, fresh, humid atmosphere, with a copious supply of tepid moisture at the root. Flowered first about 1860. It is a native of Borneo and the Malayan Archipelago. Although described as C. spectabile, it must not be confounded with the hardy North American species of that name.

Bannered Lady's Slipper (C. insigne).—This is one of the oldest and best of all the species, and one that grows well with the same care as is requisite to succeed with a Fuchsia or Geranium. It is one of the best and most suitable of all greenhouse Orchids, for it must be badly treated, indeed, if it refuse to grow and bloom. It likes a compost of fibrous loam, and well-dried cow manure on a well-drained bottom, with plenty of water at the foot when growing; blooming, as it does, in the winter, makes this doubly valuable. A very fine variety of this plant, with brighter-coloured flowers, and with more white on the upper sepal, is called Maulei. A good figure of this variety will be found in "Flore des Serres," xv., 1564. As an Orchid for room or window-culture in a Wardian case, this has no equal, as it is perfectly safe if preserved from actual frost, although the nearer the winter temperature is kept at 40° Fahr. the better. It should never be allowed to become thoroughly dry at the root, though less moisture is desirable during dull or cold weather, or the plant may suffer from damp. In the "Gardeners' Chronicle," 1842, p. 253, a correspondent recommends this as a drawing-room decorative plant when in flower, and says:—"On the 1st of December I placed eight plants in the drawing-room; there they revelled in the greatest luxuriance for three successive months and, when taken out in March, were as fresh and vigorous as the day they were put in."—Wall. Hook. Ex. Fl. 34; Lodd. Cabb. 1321; Bot. Mag., 62, 3412. The figure under this name in Bl. Rump., 195, is the C. granduliferum of the same author.—C. insigne Veitchianum is a still finer variety than C. Maulei, the upper sepal being large and white nearly to the base, profusely blotched with crimson. A plant of this was sold in the Meadowbank collection for over twenty guineas.

Shaggy Lady's Slipper (C. villosum).—One of the finest and most luxuriant of all the species, which grows equally well either in a hot stove or in a cool Orchid-house. Coming from the hot climate of Moulmein one would expect a high temperature was essential to its well-being, but such is not the case—indeed, the plants seem fresher and more vigorous when grown in a cool, moist, airy temperature than when coddled up in the East Indian-house. The foliage is of a fresh green colour, the base behind being profusely speckled with purple; flowers, solitary, on stout, hairy scapes, 2 in. to 6 in. in height; sepals, oblong, greenish, shaded and streaked with brown towards the base; the spathulate petals are of a bright brown tint, shining as if varnished; the lip is of a pale yellow tint, shaded with purplish-brown, and shining like the petals; the oblong staminode is honey-coloured, slightly tinged with green, having a blunt tooth or a projecting tubercle in the centre; well-grown specimens bear twenty to thirty flowers, and last six weeks in perfection. This is one of the best species an amateur can add to his collection, as it seldom fails to please. A native of India-Moulmein, where it was found by Mr. T. Lobb, one of the most successful of the Veitchian collectors, at an elevation of 5000 feet.

Hairy Lady's Slipper (C. hirsutissimum).—A free-growing plant, bearing large fully-expanded flowers on scapes shorter than the leaves. Although not particularly showy it deserves culture as a variety, especially as it blooms freely at the dull season of the year, when flowers of any kind are valuable; flowers, solitary, the sepals being green, shaded with dull brown, the petals having undulated margins, and a partial twist near their apices, green at the base, profusely dotted with brown, and of a bright purple tint at the apex; lip, green, very profusely dotted with brown. This species was first published by Hooker in the "Botanical Magazine," from Lindley's manuscripts, and the plant first flowered in English collections about 1858. Lindley remarks that it is allied to C. insigne, villosum, Lowii, and barbatum, which species he thus distinguishes from each other:—"C. insigne is only tomentose, and its petals want the spathulate form, long hairs, and strong undulation. C. villosum has longer flowers, no undulation or beard, or ciliation of the petals, and has the sterile stamen truncate, not quadrate. Of C. Lowii, the long, flat, naked petals are quite different. C. barbatum has a circular, not quadrate, sterile stamen, spotted short leaves, and wants the shagginess. In C. purpuratum the sterile stamen is lunate." The plant is a native of Assam.

Mr. Fairie's Lady's Slipper (C. Fairieanum).—One of the rarest and most distinct plants in the group, easily recognised when in bloom by the rich purple markings on its dorsal sepal, and by the rich double curve assumed by the petals. The plant is rather small in habit, having pale, greenish leaves that spread horizontally over the top of the shallow pan in which it should be grown. It is rather delicate, and likes a warm, partially shaded position in the East Indian-house or plant stove, with a fresh, open, sandy compost thoroughly well drained. The flowers are solitary on slender scapes, the upper sepal being large in proportion to the other segments, the margins being undulate or pilose or ciliate, while at the apex striped with rich purple or claret markings. The lower sepal is greenish-white and much smaller; petals, curved downwards, green striped with purple, margined with purple hairs. The plant was first described by Lindley from a specimen which first bloomed with Mr. Fairie, of Liverpool, in 1857. The plant was first imported from Assam, and, although many consignments have been received, it continues very rare. It blooms in the autumn and lasts well.

Mr. Hugh Low's Lady's Slipper (C. Lowii).—This is a strong-growing vigorous-habited species, introduced in 1846, and was described soon after from a specimen which bloomed in the collection of A. Kenrich, Esq., of West Bromwich. It is a native of Borneo, where it is found growing on the branches of some of the highest forest trees. I have seen some finely-grown plants in the garden of Provost Russel, of Mayfield, near Falkirk, N.B., who has one of the best and most complete collections of these curious and beautiful plants that I have ever seen. One of these plants bore six flowers on a fine scape nearly 4 ft. long. The foliage is about 12 in. to 14 in. long, and 1½ in. in width, of a dark green colour, the erect scape being usually 2 ft. high and three to four flowered. The upper sepal is downy at the back and pale green within. The petals are 3 in. to 4 in. long, projected nearly horizontally at right angles with the lip. These are spathulate in form, yellowish-green at the base, heavily spotted or blotched with purple, the apices being of a dullish purple tint; the lip is oblong, blunt at the apex, of a shining purplish-brown colour; the staminode is curiously three-lobed below. This plant, although a native of one of the hottest and most universally humid districts in the world, grows perfectly well in a moderately cool Cattleya-house. They grow best in a fresh open turfy compost surfaced with living Sphagnum Moss, into which its thick hairy roots branch in all directions. This plant is more rarely known as C. cruciforme. It is a native of Borneo.

Schlim's Lady's Slipper (C. Schlimii).—This is a charming little plant when well grown, yet growers, as a rule, fail in its cultivation. I have only seen two plants in a first-class condition, one in Provost Russel's well-known collection at Falkirk, and the other in Mr. Edwin Wrigley's garden at Bury, Lancashire. The last-mentioned specimen had leaves 12 in. to 15 in. in length and nearly 2 in. broad, being of a fresh light green colour, and in the most vigorous health. It was growing with Odontoglots, Disas, and Oncidium macranthum, in a cool moist house, and was literally revelling in a fresh open compost of turfy loam and fibrous peat, surfaced with living Sphagnum Moss. It bears pretty little flowers 1 in. to 2 in. across, on erect, simple, or more rarely branched, spikes. The sepals are oblong, slightly downy, and greenish-white; petals, oval or oblong, pure white, sometimes sparingly spotted with bright purple; lip, rounded, white, suffused with bright rose. The flowers are not unlike those of the North American C. spectabile in shape and colour, but smaller. It is very liable to the attacks of thrips, which seem especially fond of its fresh succulent young leaves; a cool atmosphere, regular supplies of moisture at the root, together with daily syringings, and a shady position in the house, will do much to prevent their ravages. It is a chaste little species, well worth culture. It is a native of New Grenada, and flowered with Mr. Bull about 1866.

Long-tailed Lady's Slipper (C. caudatum).—This is one of the most attractive of Orchids, and, at the same time, one of the greatest curiosities of the vegetable kingdom. The foliage is strap-shaped, 5 in. to 10 in. in length by about 1 in. wide, and of a bright green colour. The spike is two or three flowered, and is a little longer than the leaves. The flowers are large and handsome; sepals, ovate-alternate, the lower one rather larger than the upper one, 3 in. or 4 in. in length, and of a pale yellowish colour, streaked with deep green markings, and sometimes tinged with rose. The lip is large and very much swollen, yellowish outside, heavily suffused with greenish-purple. The colouring is very rich in the best forms. The infected lobes at the base are of ivory whiteness, spotted with rich purple markings. The petals are the most striking parts of the flower, and are remarkable not only for their great length, but for the gradual manner in which they elongate until the maximum length of from 20 in. to 30 in. is attained. When the buds first open these petals are not much longer than the sepals, but they continue to increase in length, for nine or ten days at least, after the flower opens. It would be interesting to know the cause of their rapid growth, while, at the same time, the rest of the flower does not visibly enlarge; it is, however, a peculiarity evinced, more or less, by all the long-petalled Cypripedes and by one or two Brassias. Another case, nearly similar, is found in the tail or spur of Angræcum sesquipedale, which frequently attains the length of from 12 in. to 16 in. It was pointed out by Darwin, in his "Fertilisation of Orchids," that in its native habitat (Madagascar) there probably existed a lepidopterous insect with a proboscis sufficiently long to reach the nectar, which is secreted at the very bottom of the tube or nectary, and suggested that its so doing resulted in the fertilization of the flower. More recently this has been proved to be the case, and a moth has been discovered in the island with a proboscis of the required length. In the case of the long-tailed Lady's Slipper I have often thought that it might possibly be fertilised in Peru by large ants or other creatures unable to fly, and that the long petals served as ladders up which they can climb to the sexual apparatus. It is one of the best species in the genus, and should be introduced to every collection. C. caudatum roseum is a brighter coloured variety, which succeeds well under rather cooler treatment than the normal type. This plant grows well in a cool Orchid-house where the temperature is kept about 40° in winter, and is very effective. C. caudatum first flowered in the once celebrated collection of Mrs. Lawrence at Ealing Park, in 1850. Native of the Peruvian Andes.

Mr. Stone's Lady's Slipper (C. Stonei).—This may be considered as one of the most attractive species in the whole group. It was first imported from Sarawak by Messrs. Hugh Low & Co., and named in honour of Mr. Stone, an enthusiastic cultivator and late gardener to Mr. Day, of Tottenham. It has smooth foliage of a bright green colour, about 1 ft. in length, and 1½ in. to 2 in. in width. The flowers are borne two to four together, on a large curved erect spike, subtended by large bracts. The flowers are large and brightly coloured; sepals, white, faintly tinged with rose, and heavily blotched behind with purple; petals, 5 in. long, and ⅓ of an in. broad, drooping, slightly twisted, of a faint colour, streaked and blotched with purple; lip, not unlike a Mahomedan slipper in shape; of a bright rosy-lilac colour, with conspicuous carmine-tinted veins. The style is curiously two-branched, and the staminode is surrounded by a hairy border, like the collar of a Polish tunic. A fine variety of this, C. Stonei platytænium, differs from the normal form in having flat petals fully ½ in. to ¾ in. broad, richly blotched with purple. It is both rare and valuable.

Glossy-leaved Lady's Slipper (C. lævigatum).—In habit this is barely distinguishable from C. Stonei, and the flowering is the same. It is easily distinguished, however, by its smaller flowers, and by the purple markings in front of the ovate dorsal sepal, as well as the scape, ovaries, bracts, and petals of the present plant being profusely covered with purple hairs, while in C. Stonei they are perfectly smooth. The petals are also much more distinctly twisted, and vary from 4 in. to 6 in. in length, being of a clear yellow colour, streaked and spotted with purple at the base; the lip is yellow, shaded with purple. This beautiful plant was introduced from the Philippine Islands by the late Mr. John Gould Veitch, who discovered it growing on the roots of Vanda Batemanni. Like its congener, C. Stonei, this only succeeds well in a warm genial atmosphere, partially shaded during bright sunshine, with plenty of light during the dull autumn and winter months. Good specimens of both these beautiful plants bear from three to six fine spikes, each bearing three or four flowers.

Ledge-leaved Lady's Slipper (C. caricinum).—This is a modest slender-leaved little plant, well worth growing in a mixed collection. Its bright green grassy leaves are produced from a slender rhizome, which creeps over the surface of the mossy compost in all directions. Its flowers are borne on erect spikes, one to three together, and, though not showy, are extremely delicate in their tinting, and the narrow petals are curiously tortile or twisted like a fanciful corkscrew. Sepals and lip of a pale grass-like green hue; petals, greenish, margined with white, and tipped with purplish-brown. It flowered in Messrs. Veitch's Orchid-house in 1865, and is one of Mr. Pearce's discoveries. It grows well in a moderately cool and humid temperature, with copious supplies of moisture at the root. I have seen this plant growing vigorously and flowering most profusely in a cool lean-to Orchid-house, with air on night and day in summer. Treated in this manner, this species and the pretty little C. Schlimii do well; both like to feel the effects of condensed moisture on their fresh foliage during the night. It is a native of Peru and Bolivia, and is sometimes known as C. Pearcei, as a compliment to its discoverer.

Blume's Glandular-petaled Lady's Slipper (C. glanduliferum).—This is a rare and curious plant, not at present introduced to our collections. It bears large handsome flowers, two or three together on a scape. Petals, 3 in. to 4 in. in length, acute or sharp pointed, and bearing two or three conspicuous hairy glands along their margins; lip, inflated, pink or bright rose-coloured, with a pair of reversed horn-like appendages inside. It agrees with C. Parishii, in having long petals set with large hairy glands, but the petals of the last-named have blunt rounded hairy apices, by which it may readily be distinguished. The only figure I have seen is in "Blume's Rumphia," vol. iv., 198, where it is figured under the name of C. insigne, which must not be confounded with the well-known C. insigne of Wallich. It is also known as C. glanduliflorum. Native of New Guinea, and probably also of Java.

Rev. C. S. Parish's Cypripede, or the Elephant-crushed Lady's Slipper (C. Parishii).—This is a very interesting plant, with broadly strap-shaped deep green leaves bifid at the tip. The flower-spike is 1 ft. to 2 ft. long, bearing from three to five large long-petaled flowers; the upper sepal is ovate, with unfolded margins, and has a strongly defined reel behind; the lower sepal is rather smaller and reflexed; in colour they are pale greenish-yellow. The petals are 4 in. to 6 in. long, with undulated margins near the base, and the segments become distinctly twisted towards the rounded hairy tips. They are greenish-yellow at the base, margined with purple, while the apical portion is deep claret-purple, with pale margins; each petal has about three hazy marginal glands, the lip is oblong, with the lower lobes inflected in the usual way, the colour being a decided green, shaded with brown. It grows well in a warm genial atmosphere, and has recently been exhibited by Mr. B. S. Williams, at South Kensington. The only other Lady's Slipper that has the peculiar large hairy glands on its long petals is the C. glanduliferum, of New Guinea, and that has not the curious blunt tips to its petals like our plant. The plant was introduced by the Rev. C. S. Parish, who met with it in India, near the Siamese frontier.

Long-leaved or Reichenbach's Lady's Slipper (C. longifolium).—This is a free-growing species, introduced by M. Roezl, one of the most intrepid and successful of modern collectors. According to Reichenbach, this plant, C. Roezlii, C. caudatum, C. Pearcei, C. Schlimii, and one or two others, all South American, belong to Selenipedium, a genus characterised by having a three-celled ovary. The foliage of this plant is bright green, strap-shaped, 12 in. to 16 in. long, by 1 in. to 1½ in. broad. The scape varies from 2 ft. to 4 ft. long, bearing ten to twelve or more flowers, which open in gradual succession from below upwards, rarely more than one being open at the same time; in this way a plant often lasts in bloom for a whole year or more. The flowers are of a warm, yellowish-green tint, shaded with brown, each having a large green bract at the base. The drooping or divergent petals are 3 in. to 4 in. long, tapering from the base, where they are half-an-inch broad to the attenuated apices. These are of a brownish-purple colour; the lower sepal is much the largest, a very unusual occurrence in the genus, although well marked in the present species and in C. Roezlii. These segments are of a greenish-brown colour, the lip being oblong, olive green in front, and profusely dotted or speckled within. The rhomboidal or triangular staminode has a conspicuous rim of stiff black hairs along its upper margins. It grows well in a moderate temperature. This is also, though erroneously, known as Reichenbachii in some gardens. A native of Costa Rica.

Roezl's Lady's Slipper (C. Roezlii).—This is a very robust plant, very nearly related to the long-leaved Cypripede, but distinguishable by its much longer and broader foliage, and by its flowers being larger and much more showy. The leaves vary from 12 in. to 18 in. in length, being nearly 2 in. wide, and of the freshest green colour imaginable. It grows freely treated like its congeners. The spike, like that of the last-named, is from 2 ft. to 4 ft. long, with great Strelitzia-like bracts at the base of each flower. The flowers open in gradual succession, rarely more than two being open at the same time, and the plant continues flowering for ten or even twelve months from the same spike. The sepals are ovate, and of a soft rosy tint, the lower segment being nearly twice the size of the upper. The petals are 3 in. to 4 in. long, and of a bright rosy-purple colour; the lip is green shaded with purplish-brown, the inflected sides being pale yellow, profusely warted, and having two green glands on each side about the centre. It is a noble plant that should be included in every collection. Uplands in South America.

Linden's Uropede (Uropedium Lindeni).—This curious and extremely rare plant was named by the late Dr. J. Lindley, one of the most distinguished and acute of all orchidologists. It grows well in a cool house, and was introduced to our collections in 1848 by M. Linden, after whom it is named. As a genus this differs from Cypripedium of Linnæus or Selenipedium of Reichenbach by having an elongated petaloid appendage in place of the swollen slipper-shaped lip. In habit and mode of flowering the plant is identical with C. caudatum, and the flowers closely resemble those of the last-named plant in every respect, except in the slipper being transformed into a long caudal appendage. It does well treated like C. caudatum. The plant flowers in the spring, and may be regarded as a monstrous form of the last-named species. It is a native of New Granada, where it grows sparingly in moist woods at an altitude of from 7000 ft. to 8500 ft., and where the mean annual temperature is only 56°. It first flowered with M. Pescatore, of St. Cloud, near Paris, in 1853.

Hartweg's Lady's Slipper (C. Hartwegii).—Hitherto this fine species has been known only through dried specimens and the figure in Reichenbach's "Xenia Orchidaceæ," but a recent collection of

Orchids sent to this country by Mr. Wallis is supposed to contain this plant, and, if so, it is the first consignment of living specimens of it hitherto received in England. In habit it comes near C. Roezlii, having long, arching, bright green leaves, and tall nine and ten-flowered scapes, each flower being produced from the axle of a large Heliconia-like bract. The flowers are greenish suffused with brown, the large, inflated, apple-green lip being streaked with purple. It is a plant of a bold and striking character, and well worth culture.

Drury's Lady's Slipper (C. Druryi).—This is a comparatively modern introduction, having been brought from the Continent to this country in the spring of the present year. It is distinct as a species but comparatively unattractive. In general habit it closely resembles C. villosum, the flowers being borne singly on rather short, stout, hairy scapes. The sepals and petals are very short and of an apple-green colour, each having a purplish, hairy band down the centre. The lip is greenish suffused with brown. We have only seen this plant in Messrs. Veitch & Son's collection at Chelsea, where it flowered freely a few weeks ago.

Hybrids.

M. Seden's Lady's Slipper (C. Sedenii).—This is a very beautiful hybrid, and very vivid in its colouring. It was raised by Mr. Seden, one of the foremen in the Royal Exotic Nursery at Chelsea, and is the result of a cross between C. Schlimii and C. longifolium. It is an interesting fact that the plants were inter-crossed with each other, and seedlings raised from both; the species, as seed-bearing parents, gave exactly the same results. The foliage is strap-shaped, gracefully curved, and of a bright green colour. Flower-spikes purple, hairy, bearing five to seven flowers each, only one or two being fully expanded at the same time. The sepals are oblong, of a bright rosy colour. Petals oblong, inclined to be strap-shaped, and partially twisted near the apex, creamy-white with deep, rosy margins; lip oblong, bluntly pointed, the mouth being curiously lobed on each side, and having rounded bosses on the front margin. The inflected sides are pure white, dotted with rose, the staminode being slightly downy and tinted with pale yellow. It flowers very freely throughout the winter, and its bright foliage and brilliant flowers make it a general favourite. Grows well in a cool house.

Dr. Harris's Lady's Slipper (C. Harrissianum).—This is a very robust, free-growing hybrid, raised by Mr. Dominy between C. villosum and C. barbatum. The leaves are 5 in. to 7 in. long, nearly 2 in. broad, and are of a bright green colour, marked with darker green in the way of C. barbatum; flowers large, shining as if varnished, shaped something like those of the first-named parent, but darker in colour; the lip is rich purple, the petals being shaded with purple and brown. It grows and blooms nearly all the year round, and is one of the finest plants in the whole group. Some forms are deeper and brighter in colour, but all are good, and well worth culture in the most select collection.

Standard Lady's Slipper (C. vexillarium).—This is another beautiful plant raised at Messrs. Veitch's establishment at Chelsea. It has variegated foliage, and is the result of a cross between C. barbatum and the pretty little C. Fairieanum. The result is a very interesting hybrid, nearly exactly intermediate in character between the two species. The dorsal sepal is roundish-oblong, with undulate hairy margins, of a light greenish tint veined with purple; petals curved like those of the last-named plant, hairy along the margins, pale green in colour, with dark veins and purple spots and markings; lip purple, shaded with green. It flowers during the winter months, and is well deserving of general culture.

Mr. Dominy's Lady's Slipper (C. Dominii).—This is a free-growing plant with the general habit of C. caudatum, except that the leaves are narrower and more gracefully curved. It is the produce of seed from the last-named plant, fertilized with C. caricinum, and the flowers, although closely resembling C. caudatum in form and size, show traces of both parents; the sepals are light green shaded with dark green, the drooping twisted petals being of a pale yellow tint, streaked with bright reddish crimson; the inflected lobes of the lip are pure white with rich claret-coloured dots, while the sac-shaped central lobe is green, heavily shaded with a purplish-brown. It is a most desirable plant, blooming during the winter and spring months, and lasting a long time in beauty if the flowers be kept dry.

Lady Ashburton's Lady's Slipper (C. Ashburtoniæ).—This is the result of a cross between C. insigne and C. barbatum. In habit and inflorescence it somewhat resembles both parents. The leaves are shaped like those of C. insigne, but are a little broader, bifid at the tip, and covered with dark net-like markings of dark green on a lighter ground. Some individuals are marked nearly as distinctly as C. barbatum, while in others the markings are barely visible. The flowers are in shape similar to those of the last-named, and are borne singly on a slender chocolate-coloured scape about a foot high. Upper sepal white at the apex, greenish at the base, having numerous deep brownish-purple stripes and blotches; petals slightly deflexed, oblong, wavy along their margins, of a greenish-white with deep purplish veins; the margins being hairy and tinged with purplish-rose. Lip oblong, rather blunt at the point, and narrowing towards the mouth; the colour is greenish shaded with purple, the depth of colour varying in different individuals. It is an interesting and easily-grown plant, well worth growing. It was raised by Mr. Cross, late gardener to Lady Ashburton, at Melchet Park, Hampshire, after whom it is named.

Mr. Cross's Lady's Slipper (C. Crossianum).—This is another pleasing hybrid, raised at the same time as the last, and from the same parents. Its oblong foliage is intermediate between that of C. insigne and C. venustum, being of a glaucous green tint above, paler below, blotched with purplish-black towards the base. There are a few dark reticulations on the upper surface of the leaf. The flowers are borne on purple hairy scapes, 8 in. to 12 in. in length, the bracts being glaucous with purple spots; upper sepals white at the apex, pale green below, with dark green nerves, and a few purple spots at the base; petals strap-shaped, slightly wavy, of a brownish-copper colour, with dark purple or blackish spots; the lip is yellowish shaded with bronze, and having the green net-work as in C. venustum; the staminode is like C. venustum in form, but of a yellow or pale honey colour, as in C. insigne. It is an interesting plant, and must not be confounded with C. barbatum Crossii.

C. œnanthum.—A distinct and singular seedling, raised in the Exotic Nursery, Chelsea, where it first bloomed in the spring of the present year. It is a seedling from C. Harrissianum (C. barbato villosum), itself a hybrid, and the pollen parent is supposed to have been either C. Stonei or C. insigne Maulei. In general habit and colour it resembles the female parent, but there is much white at the tip of the dorsal sepal and some spots which suggest C. insigne Maulei, while the purple-striped ovary is exactly like that of C. Stonei, except that it is densely hirsute. It is a good addition to robust stove Lady's Slippers, and well deserves culture.

C. pycnopterum.—This plant somewhat resembles C. hirsutissimum in general habit, but bears a two-flowered scape, at least it did so on its first blooming in the Exotic Nursery at Chelsea, where I saw it a month or two ago under the care of Mr. Seden. In colour and markings the flowers resemble those of C. Lowii, but are scarcely so large. The texture of the leaf exhibits that glistening layer of surface-cells so characteristic of C. venustum and its forms that I am inclined to think that that species and C. Lowii must have been the parents of the hybrid in question, although no records have been kept of the cross. It is very distinct, and well deserves a place in collections. F. W. B.

The Gardener's Life.—"Thus we associate gardens and orchards with the perfect condition of mankind. Gardeners ourselves by birthright, we also mythologize and plant our Edens in the midst of us, like our ancestors; the sacredness of earth and heaven still clinging to the tiller of the ground. Him we esteem the pattern man, the most favoured of any. His labours have a charming innocence. They yield the gains of a self-respect denied to other callings. His is an occupation friendly to every virtue; the freest of any from covetousness and debasing cares. It is full of honest profits, manly labours, and brings and administers all necessaries; gives the largest leisure for study and recreation, while it answers most tenderly the hospitalities of friendship and the claims of home. The delight of children, the pastime of women, the privilege of the poor man as it is the ornament of the gentleman, the praise of the scholar, the security of the citizen, it places man in his truest relations to the world in which he lives. And he who is insensible to these pleasures, must lack some chord in the harp of humanity, worshipping, if he worship, at some strange shrine. Who loves a garden still his Eden keeps; perennial pleasures plants, and wholesome harvests reaps."—Alcott—Tablets.

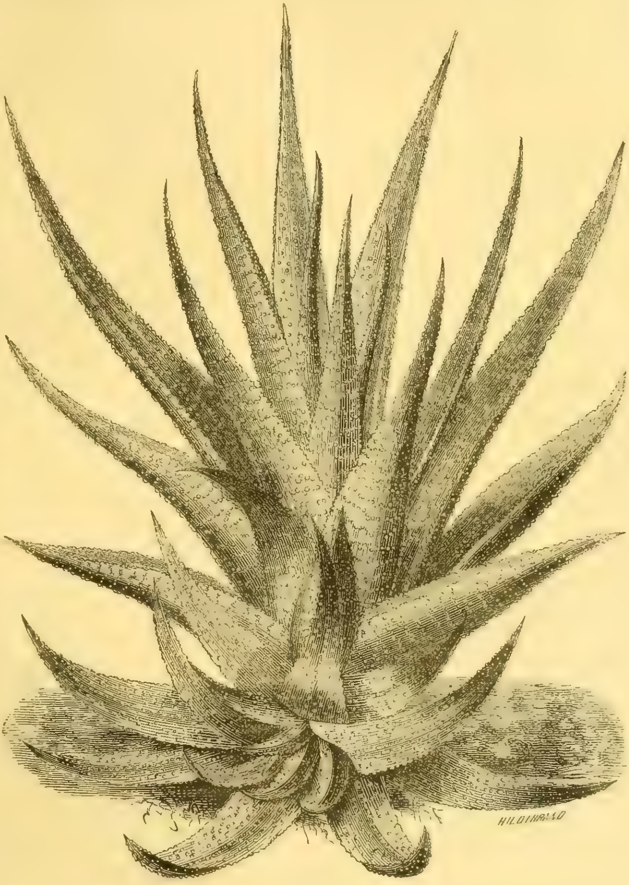
The Old Days of Price's Patent Candle Company.—Mr. G. F. Wilson, late manager of Price's Patent Candle Company, has just published an interesting account of the rise and progress of that establishment, for the conversion of Palm and Cocoa-nut oils into candles. In the appendix are given several items of valuable information relating to the production of Chea butter and Palm oil; from which it would appear that the land on the banks of the Niger and Chadda are much more highly cultivated than is generally supposed. We observe that Mr. Wilson casually remarks that ten years hence for one beautiful hardy plant now common in our gardens, we shall have ten.

THE INDOOR GARDEN.

THE PEARLY ALOE.

(HAWORTHIA SUBULATA).

One of the most ornamental of the large tribe of Aloes, numbering some 200 distinct species, is the Haworthia subulata, generally called Aloe margaritifera, or Pearly Aloe, of which the annexed is a representation. It has a very short stem, and leaves which are flat above and convex below—in short, triangular in shape and rounded towards the tip. They are covered with a number of white, horny tubercles, which resemble pearls, and give the name to the species. The flowers are greenish, with whitish lobes marked with a green line, and are grouped together in a terminal spike. The beauty of this Aloe, or Haworthia, however, resides in the leaves, the flowers being, comparatively speaking, insignificant. It is by no means difficult to grow, nor are any of the genus to which it belongs; the best soil for it is a mixture of three parts loam and equal parts of leaf-mould and sand, and it likes good drainage and partial shade in a cool greenhouse. J. C.



The Pearly Aloe.

CALCEOLARIAS.

The herbaceous Calceolaria is one of the most beautiful of greenhouse flowers, and perhaps less frequently met with than it deserves, which fact rather indicates a difficulty of cultivation than a defect in the plant itself. Its annual character prevents the establishment of named kinds; and to many persons this should prove a recommendation, for a packet of seed of a good strain, like the Primula, gives, in the course of a few months, a superb display of bloom, without the trouble incidental to the propagation and correct naming of catalogue kinds. The Calceolaria is eminently a cool plant, abhorring heat, and, as a necessary consequence, the attendant danger of insect life; indeed, the difficulty of keeping the plants free from blight, and in a state of clean, healthy vigour, is the rock on which so many growers of the Calceolaria have foundered. Another great risk of failure is to be traced to the too common practice of sowing early, and thus getting the plants stunted by the summer-heat, instead of growing them rapidly direct from the seed-pan, and not allowing them any rest until in full bloom. The most successful cultivator of the herbaceous Calceolaria, probably, is Mr. James, of Redlees, Isleworth, and his celebrated strain of this beautiful plant is at the present time unequalled. Those who remember the International Exhibition of 1866, will not soon forget the beautiful bank of flowers Mr. James then staged, which seemed to have reached the highest possible degree of perfection. The plodding florist, however, never sits down to "rest and be thankful:" for, if unable to do much for improvement in the way of hybridisation, the simple process of selection and constant increase from the finest flowers is always at his disposal. It is this kind of treatment of Calceolarias of which Mr. James is continually availing himself for the production of next season's flowers, invariably selecting from the plants that have a stout, erect, but compact habit of growth, and from flowers that have, in addition to striking hues or beautiful markings, a bold, full form, good size, and devoid of what is termed "bagginess," a grave defect, and too common in many plants. A good strain of the herbaceous Calceolaria produces immense trusses of bloom, the individual flowers of which, although thickly clustered, are yet large, rounded and full, having no lobes or indentations, but each perfect and exactly in its place. Many of these trusses when fully expanded measure 6 in. across, and when seven or eight of these are produced on one plant a grand specimen is obtained. Not the least remarkable fact in connection with the herbaceous Calceolaria is the rapidity with which fine exhibition plants are obtained from seed. Mr. James does not sow the seed until about the second week in July, but in ten months he is enabled to show grand plants raised from that sowing, about 15 in. in height and 18 in. in diameter, that are a mass of rich bloom and fine vigorous foliage — perfect marvels of cultivation. The seed is sown in shallow pans and in fine sweet loam, with which there is a good admixture of sharp silver sand; the pans are placed on a shelf in a cool house, and kept shaded from the sun. The seed speedily germinates, and the plants grow so rapidly, that they are soon large enough to be pricked out into other shallow pans, which are again placed on a shelf and shaded as before, or placed in a cool frame close to the glass. In a short time the seedlings are ready to be potted up into large 60-sized pots, and are again placed in a cool frame for a few weeks, care being taken that none are allowed to get dry at the roots, and sufficient air given to keep the foliage clean and vigorous. Ere the pots are full of roots, another shift should be given, this time either into 32 or 24-sized pots, according to the size of the plants, and if extra fine specimens be desired, the largest should have a final shift into 16-sized pots, in which they will develop into grand plants. Insects must be constantly looked for, and if found troublesome, the plants should have an occasional dip into weak Tobacco-water; but under ordinary circumstances an occasional fumigating should keep them free from these pests. The flowers, of a fine strain, are remarkably varied, and range from creamy white to intense maroon-crimson—the Redlees plants being prominently marked with very dark rich hues. The blotched forms are most interesting and beautiful, and are commonly found on primrose, yellow, and orange grounds; indeed, taken altogether, the Calceolaria has few rivals as a decorative plant at this time of the year. A. D.

Fuchsia Sunray.—This is among Fuchsias what Mrs. Pollock was among Geraniums when it first came out. I have included it among my stock plants. It is a free-growing, neat-habited Fuchsia, furnishing well as it grows, and naturally forming a pyramid if not pushed too much in strong heat. The leaves are broad, regularly and distinctly splashed with creamy-white and green, suffused with crimson, especially at the points of the young shoots, a circumstance which gives the plant a distinct and highly ornamental appearance. The variegation is constant, and the different shades are more distinctly produced when the plant is grown in the greenhouse, and well exposed to the light, than elsewhere. Generous treatment and a good soil increase the size of the leaves without affecting the variegation, and, as the flowers are unimportant, it is best to pick them off, as they only weaken the shoots. Cuttings of this variety strike freely in the usual way, and should be potted off singly; small plants, about a foot high, look best, and are most useful.—C.

Violets in Pots.—The possession of such varieties of Violets as the Czar and the new Victoria Regina gives quite a new aspect to the culture of Violets in pots. The old Neapolitan, though likely to hold its own against all comers, as regards sweetness and free-flowering habit, was hardly adapted for pot culture; it thrives in a bed of good soil in a frame, but in pots it is apt to become somewhat shabby, being subject to red spider, and a weak grower, a great drawback to pot plants of any kind. With the varieties of the Czar type it is, however, different; they have robust, bold, and erect foliage, which fills and looks well in a pot, and they are sure bloomers, and throw their flowers up well above the leaves, stand forcing better, and bloom in great profusion. I have just lifted a quantity of last year's roots of the Czar and Victoria Regina, sub-divided them, using both the old crowns split up and rooted runners, and potted them in 5-in. pots in good, light, rich soil, and hope to have them in flower early in the winter without much forcing. I used to content myself with lifting the roots out of the ground and forcing them at once; but, like Strawberry plants, prepared ones succeed best. The plants should be plunged in ashes during the summer, or, at least set thickly together—to keep each other's roots cool—in a rather shady situation. They should never be exposed to the full force of the mid-day sun, and should at all times receive plenty of water at the roots. Before the weather becomes so severe in autumn as to injure the foliage, the plants should be moved into a cool frame (fire-heat will hardly be needed), and from such quarters they can be introduced into the greenhouse or conservatory as required, when they will continue to produce flowers for a long period if they be properly attended to, and above everything, kept near the light.—Chef.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Soil for Camellias.—I had some top-spit from a pasture, and mixed it with lime and bones, about two years ago. I intend using half of this, and the other half good turfy soil, from a pasture on limestone rocks, for my Camellias. Can this mixture be recommended?—M.—[With the exception of the lime, of which we should use as little as possible, your compost will suit Camellias perfectly.]

Successful Culture of Calochortus.—These beautiful bulbous plants from the Pacific side of America have hitherto been seldom cultivated with success in this country, our cold winters destroying the foliage that passes through a Californian winter and spring without injury. In the Hale Farm Nurseries at Tottenham, they are very well grown planted out in shallow frames, where they enjoy a sufficiently moist and open gritty soil below, besides the advantage of a light, dry soil on the surface of the beds. They get good light, being quite near the glass; they are planted early enough in the autumn to ensure an early growth, and, as a consequence, they flower abundantly.

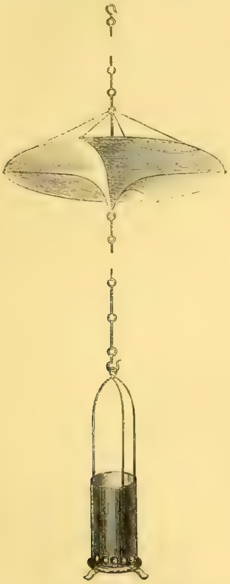
THE DADDY-LONG-LEGS.

This insect is in a general way objectionable, but particularly so at the present time in and near London. A considerable number of Grass plots in places of public resort are just now absolutely destitute of Grass, and present a most deplorable appearance. This is especially the case with the large and useful open space known as London Fields. The new garden in Leicester Square is destitute of Grass; the turf on the Thames Embankment gardens is unusually thin, and, indeed, whichever way we turn we are pretty sure to meet with similar examples. There can be no doubt that the proximate cause of this is the dark grub of the Daddy-long-legs (the Crane Fly, Tipula oleracea), which is sufficiently well known to render description unnecessary. This larva has a peculiar taste for Grass-turf; it is partial also to Lettuces, Strawberries, and, indeed, will eat almost any of our kitchen garden vegetables, and has quite a fancy for a feast in a seed-bed, where it will thin the rows of seedling plants with a severity worthy of a better cause. The extent to which the pest has spread in some districts of London is almost past belief. We have seen some spots in London Fields where the ground seems to be so literally alive with this insect that handfuls of it may be taken up with but little searching. It is difficult, at least at present, to say anything useful respecting this daddy-long-legs. But a patch of Grass anywhere in a great city is so precious that we may with propriety ask why the insect should prove so specially destructive amongst houses, while, as soon as we escape from the town we find the turf everywhere in good condition, or if not so, at least not seriously injured by this insect-destroyer. What makes the difference? The answer is obvious—Wherever song birds are fairly plentiful Grass thrives, and where they are scarce daddy-long-legs has it all his own way. It is true that in town sparrows abound, but these rarely hunt for earth grubs, whereas the thrush, the blackbird, and the whole tribe of warblers that dwell with us during the summer season, subsist chiefly on insects, which they pursue from daybreak to dusk. We cannot, of course, compel song birds to locate themselves in towns, but we are bound, in the interest of one of the principal charms of English rural scenery—that is, fresh green turf—to protect them to the utmost of our power, and happily the well-planted suburbs of most of our great towns are plentifully stocked with these delightful and useful birds. It will be found that wherever they abound, the keeping of Grass turf is a comparatively easy matter, but that wherever they happen to be scarce the Tipula is a frequent and a powerful enemy. In the spring of 1858 the great parks in the west of London were almost as bare as London Fields and Leicester Square are at this moment, and numbers of remedies were proposed. One of the best of these was that of the late Mr. Cuthill, who recommended rolling the Grass at night with a 2-ton roller, with a Thorn-scrubber behind well loaded. Then followed a host of proposals more or less suitable for adoption on a small scale, but inapplicable to such vast areas as the London Parks. One of these consisted in watering the turf with a mixture of corrosive sublimate dissolved in muriatic acid in the proportion of 1 oz. to half a pint of acid, and the addition of 60 gallons of water. Gas-water, quick-lime, lime-water, salt-and-water, and other cheap preparations that usually prove fatal to insects, are of no special value in this case, because to employ them sufficiently strong to penetrate the leathery jackets of these grubs makes the case worse by killing whatever Grass still remains for the renewal of the turf. The best mode we have as yet heard of for dealing with this plague is contained in a report to the Parks and Open Spaces Committee of the Metropolitan Board by Mr. N. Sinclair. He says, "The experience by which I obtained this method was gained through a similar invasion of the Embankment Gardens by these insects four years ago, when I had the opportunity of studying their habits and ascertaining the best means for their destruction. I found that only certain portions of the gardens were infested, from which I infer that their haunts depend much on the wind and weather, being thus driven to collect in the most sheltered places, where they deposit their eggs. The grubs make their appearance in January, and when commencing their depredations may be captured in thousands by cutting square trenches 6 in. wide and 6 in. deep, into which the grubs in their wanderings fall, and since they cannot crawl up the perpendicular sides of the trench, they may be swept up the next morning and thrown into salt, that being the only substance I have found efficacious in killing them. I have tried other things for that purpose, such as quick-lime, soot, snuff, &c., but none answered the purpose so well. The remainder of the grubs that are not swept up turn to the chrysalis state, and in due time come forth as the well-known daddy-long-legs, and soon after spread themselves abroad and deposit their eggs wherever it is most likely their offspring will find suitable sustenance. As soon as they make their appearance on the wing there is nothing better than heavy garden rollers. On bringing these into play the extermination of this obnoxious pest may be considered complete.—"Gardeners' Magazine."

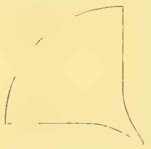
LAMPS FOR WARMING CONSERVATORIES, &c.

Keeping frost out of small greenhouses by means of lamps and candles, as noticed by a correspondent in a recent number of The Garden, is not new; on the contrary, it was frequently practised in the days of tinder boxes and rush-lights. Four of the latter I once saw placed in a row, and lighted at night, whereby the temperature of a conservatory was raised several degrees. What advantage the petroleum lamp-stove has over this rough-and-ready mode of heating it is not very easy to discover. The fallacy underlying that invention may be traced to the ordinary stove and open fireplace, in which the vapour is allowed to escape by means of a chimney. In all modern improvements the aim of the inventor has been to extract as much of the heat as possible from the burning fuel before it has passed up the chimney in the form of smoke. Even in the best constructed grates it is well known that by far the larger half of the heat escapes in that form; but when a lamp burns in a room, the latter receives all the heat—not a small portion of it only. In the chimneyed stove are found all the appliances by which the heat can be radiated, and in that way abstracted from the burning fuel; and the chimney itself is frequently turned to account as a radiator of heat when it takes the form of a stove-pipe. But where no provision is made for the escape of the products of combustion, the chamber then gets the whole of the heat generated, and there is consequently less need of radiating surfaces. Bright metal would not answer that purpose, but rather tend to confine the heat and make it take an upward direction. A terra-cotta envelope might act as a radiator were that required; but it is the lamp that gives the heat; and all the heat that is generated in a petroleum stove proceeds from the lamp, and from the lamp only. If the products of combustion be let into the room, there is no need of an expensive metal case. It is a law, admitting of no exception, that the same weight of the same fuel will always give, in whatever way it is burnt, whether quickly or slowly, the same amount of heat. If the proceeds be let into the room, all the heat comes into the room, and the twenty shillings' worth of tin or the forty shillings' worth of copper is doing nothing. If it has been found by actual experiment that the lamp, when taken out of its metal envelope, did not raise the temperature of the room as it did when burnt in it, the reason can only be that it consumed the oil faster; in fact, that it did the work and consumed the oil of a larger lamp, so that no real advantage was gained from its metal case. Another point to be considered in connection with this stove is the notion that it produces a dry heat, and therefore requires an addition in the form of a vaporizer. Now, when it is remembered that from lamps and candles the products of combustion are carbonic acid and water, this arrangement seems almost superfluous. A vaporizer is needed where, as in a common chimneyed stove, the products are allowed to escape in the form of smoke. In winter, when heat-producers are most in request, it is damp, and not dryness with which we usually have to contend; and even a hot flue does not at that season require any great amount of vaporizing. To prevent the waste of heat which usually takes place in the upper portion of a glass structure, there should be suspended immediately over the lamp a metal reflector, as noticed by your correspondent. The form I recommend is that of a flattened blossom of a Convolvulus. It should be kept bright on the underside to act as a conductor, and cause the warm air as it rises to take a horizontal direction. As the lamp would require some sort of frame to hold it and to protect it from accident, it might stand on a disc of sheet iron 7 in. in diameter, through which three $\frac{1}{4}$-in. iron wires should pass, and be secured with shouldered and screwed ends to the feet by nuts. The upper ends of these wires should be gathered together and terminate in a ring. A cylinder of tin, 6 in. in diameter and about 12 in. high, perforated at the base with draught holes, and painted outside with lamp-black if wanted to serve as a radiator, sliding over the wires and resting on the disc, would complete an inexpensive frame, which any ironmonger could make for a few shillings. Four sheets of tin cut into this form, and riveted or soldered together, would suffice for a reflector. The distances (1) between the point of suspension and the reflector, (2) between the reflector and the lamp, (3) between the lamp and the ground would have to be determined by experiment, care, however, being taken that the reflector should be at such a distance from the lamp that it does not acquire a temperature of more than 100° Fahr. The lamp, if used without a reflector, should be placed low, and might even stand upon the ground. The $\frac{1}{4}$-in. wires should extend about 12 in. above the top of the cylinder, and the latter would have simply to be raised whenever the lamp was put in or removed.

B. S.



Lamp, for warming conservatories, &c., with cylinder and reflector.



Form of Tin to make reflector.

New Buildings at Kew Gardens.—We learn from the "Builder" that under the superintendence of Her Majesty's Office of Works some new buildings and extensions are about to be made at the Royal Botanical Gardens at Kew, for the reception of specimens of plants and flowers, and that for this purpose the west wing of the Herbarium, adjoining the entrance to the gardens, is about to be demolished.

Cheap Cisterns.—It is not generally known, according to "Moore's Rural," that cisterns can be made without either brick or stone, wherever the earth is sufficiently compact to admit of digging out the soil and leaving a firm bank upon which cement can be spread to a thickness of 1 in. or 2 in. The cement soon hardens, making a wall as tough as a stone jug. The top may be covered with plank, with timber support, and then covered over with about 2 ft. of earth to keep out frost. Of course a man-hole, through which the cistern can be entered for cleaning, is also necessary.

Plant Specific against Hydrophobia.—Dr. Grzyvala, of Krivoe Ozero, Podolia, has found that after having treated at least a hundred cases of men bitten by rabid dogs with Xanthium spinosum, he has never in any case failed to ward off hydrophobia. For an adult, the dose is sixty centigrammes of the dry powder, repeated three times a day, and continued during six weeks. Children under twelve take half that quantity. The dose for animals is much larger.

Latin Names of Varieties.—Our readers may remember that when Messrs. Maxwell and Barry introduced two varieties of Arbor-vitæ, and named one George Peabody and the other Tom Thumb, and we supported them in the excellent innovation, the English nurserymen refused to know these varieties under these names, and re-christened them with Latin names of great length. We cannot see how Latin names are to be obviated so far as species go, but for varieties they are needless and absurd. Here before us is a list of garden forms of Holly. One is Ilex Aquifolium aurea angustifolia marginata, another Ilex Aquifolium serratifolia alba marginata, and so on. Even in Europe as in this country there have been attempts at rebellion. Mr. Waterer named one Holly Golden Milkmaid, but he seems to have been subdued, and the kind is declared to be Ilex Aquifolium aurea medio picta—only this and nothing more!—T. Meehan, in "Gardeners' Monthly."

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Flower Garden.—Now is a good time to put out all the remaining tender bedding plants, such as Coleuses, Alternantheras, Iresines, and others of similar character. They will be found to have been much better indoors than out. By the end of the month the later put out plants will, in all probability, have considerably outgrown those that were planted whilst the nights were colder.

Kitchen Garden.—Where the ground has not been previously well prepared it is difficult to deal with it after the crops are in and growing, nor will all kinds of vegetables bear treating in one uniform way, as the deep stirring of the soil between the rows, that will be of the greatest benefit to such plants as push their roots mostly downwards, would be very injurious to surface-rooting plants like Cabbages that had already occupied the soil to a considerable extent. Where the soil is in a hard impervious condition, such as it has been in many places this year, the hoe will be all but useless, and will have to give way to the fork; this should be used freely, digging the ground to a good depth in all cases, without disturbing those roots that have made some progress in entering the soil. Parsnips, Carrots, Beet, Potatoes, Turnips, Peas, and Beans of all kinds will be much benefited by the ground being thoroughly loosened up and left with the surface in a comparative rough state until sufficiently acted upon by the drying influence of sun and air, after which, when enough rain comes to moisten it again, the whole will crumble down freely when the hoe can be used afterwards as required Spring-planted Cabbages, Cauliflower, and Lettuce should have the surface for a few inches forked over, in all cases going as deep as the roots will permit. After all is done that is possible, crops that were put in the ground whilst it was in such an unusual state as it has been this season can never be expected to do so well as when sowing and planting has been carried out under more favourable conditions; but a thorough loosening up of the soil, such as described, will do a good deal to assist the later crops. Where amateurs, whose gardens are composed of heavy adhesive soil, have followed the advice I have previously given of using a few inch boards, 8 ft. or 10 ft. long, and 1 ft. wide, for laying on the ground when sowing and planting, so as not to necessitate placing a foot upon the soil after it is dug—the advantage of this will be readily seen, as it is the treading and unnecessary raking that so much aggravates the evil. The use of such boards causes very little delay, as one edge answers in the place of a line by which to plant a row or draw a drill for seeds. In the case of amateurs, whose gardens are generally of moderate extent, where the soil is of a heavy nature and difficult to work in spring, much might be done by incorporating with it the ashes produced in the household; if this material were passed through a fine riddle, about a quarter-inch mesh, regularly spread upon the surface and dug in, its effects would be soon apparent in the much more workable condition of the ground after wet weather. In districts where either river or pit sand can be had for carting this is even preferable to ashes, and may be applied from 4 in. to 6 in. in thickness. Any heavy land that has yet to be cropped and that was dug some time back before it had time to dry, should, in all cases before being sown or planted, be again dug over, bestowing more than the usual amount of labour on it in reducing the hard lumps. Every attention needful should be given to the later crops: if, as often occurs after an ungenial spring, we have a protracted autumn, the produce of the later sowings and plantings may in some measure make up for disappointments as regards the earlier ones.

Peas.—More Peas should now be sown, giving them the most open position that can be selected for them, as upon this to a considerable extent depends their escaping mildew, which is so fatal to autumn Peas in many localities, especially where the soil is light and the subsoil dry; where such conditions exist it will be well to make some provision to counteract its effects, otherwise it is of little use going to the trouble of sowing for a late crop. Trenches should be opened about 18 in. wide and from 18 in. to 20 in. deep, *i.e.*, if there be sufficient depth of soil; in the bottom put 8 in. of a mixture, half manure (cow or pig is preferable) and either marl or clay well pulverized; on this put as much of the soil that was taken out as will fill up the trench to within 4 in. of the top; after it has been slightly trodden down to solidify it, sow Peas of any approved large kind. The White Marrows are not usually so much subject to the attacks of mildew as the green, of which Ne Plus Ultra may be taken as the representative. Another matter of equal importance to preparing the soil, with the view to avoid mildew in these late Peas, is to give them plenty of room, both in the rows and between them; allow 6 ft. between the rows, and if in a trench like that described a couple of rows of the Peas be put 4 in. apart, it will be thick enough; in covering the seed, leave the surface of the trench an inch or so lower than the surrounding ground, so as to admit of the rows being thoroughly soaked with water in dry weather, especially when the pods are swelling off, as any deficiency of moisture at the roots about this time will favour the appearance of the parasite. Advancing crops of Peas should have sticks placed to them as these are required, never deferring this until they get so high as to be blown about by the wind. Sticking a row of Peas may appear a simple operation, but there is not one man in a dozen, even amongst those who are accustomed to it, who does it properly; the way in which it is generally carried out is to put the longest sticks in, so that their points meet together, forming a close narrow ridge at the top, and allowing the Peas to escape before they get even half way up; sticked in this manner their tops get broken by the wind, whereas if the sticks were placed upright and as wide at the top as at the bottom, the Peas would be kept inside the sticks, and would thus be free from accident.

Beans, &c.—A few more Runner Beans should now be sown; if these can be placed at the south side of a wooden fence or wall, where they will receive some protection, they will in all probability afford a supply in the autumn, after those in more exposed situations are cut off by frost. Another sowing of dwarf French Beans should also be made, as well as a few more Turnips; it is not advisable to put in much of this vegetable now, only just enough for a successional supply, as they will yet grow too large before winter, and not be so good for keeping as the produce of later sowings. A little Walcheren Broccoli and Veitch's Autumn Giant Cauliflower should be sown immediately, from which, with a favourable autumn, heads may be cut up to the close of the year. A pinch of Colewort seed may now be sown with advantage, as Coleworts are always handy for filling in in spare corners. Those who grow Coleworts should see that they get the right sort, which is very different from the nondescript Cabbage that is often substituted for the true variety; so much is this the case that many cultivators of small gardens have never grown the true kind. More Lettuce should be sown in rows where they are to be grown; if a trench be opened a foot deep, and the same in width, half filled with rotten manure, and mixed with a portion of the soil that has been taken out, the remainder being used to form a slight ridge on each side of the trench so as to hold water, running to seed will be reduced to a minimum, and Lettuce thus grown will attain a size and quality not to be surpassed under any other method of cultivation. Endive, on account of its beautiful appearance, is held by some in high estimation, even when Lettuce is plentiful; where this is the case a little should now be sown, and if the ground be prepared in the same way as recommended for Lettuce, the produce will attain a large size before it shows a disposition to run to seed. When the weather is showery the principal crop of Celery should be planted, giving the plants a good soaking with water previously, so that as much soil as possible may adhere to their roots; by this means they will sustain very little check. Immediately a row is planted give it a thorough watering.

Cauliflowers and Broccoli.—The land for Broccoli should be in good condition, and be careful to give all that are intended to stand the winter abundance of room, for by no other means can the requisite sturdy habit be imparted to the plants to enable them to bear severe weather. Half the losses experienced with Broccoli in sharp winters may be attributed to the plants being weak through the effects of being grown too closely. Cauliflowers do not require nearly so much room; where ground is not over-plentiful, a space of 2 ft. in the rows, with 2 ft. 6 in. between each row, will suffice.

Tomatoes should now be planted against walls, and if the border be poor give them a little well-prepared soil to start with; but they are none the better for having the material in which they are to grow too rich, as it produces rank growth in place of fruitfulness.

Stoves.

Many stove plants will now be getting sufficiently forward to enable them to be gradually hardened off, preparatory to removing them to decorate the conservatory, for which purpose Allamandas, Crotons, Dracænas, Bougainvilleas, Clerodendrons, Stephanotis, Ixoras, and similar plants are well adapted. The whole of these, if properly prepared by gradually subjecting them to cooler treatment, will remain for several weeks in the conservatory without suffering the least injury, provided they be placed in positions away from draughts, or where air, when admitted, does not have full play upon them. Among stove flowering plants, Allamandas are perhaps the most valuable, on account of the comparatively low temperature they will endure, and the length of time they last in bloom when removed from stove-heat. All shoots of these now showing flower-buds should be carefully regulated and tied so as to distribute them as equally as possible over the entire surface of the plant, without giving it a stiff, formal appearance, which a too rigid training of the young wood is sure to impart. Any that were pruned, and started later, for succession, should be placed where they can have the full benefit of sun and light, without which the growth will become long-jointed, sappy, and produce but little bloom.

Bougainvillea glabra.—This, grown as a pot plant, is highly ornamental, and conforms readily to almost any kind of training, as it may be grown in the loose pyramidal form, or on trellises, after the manner of Stephanotis or others of that class. The former, however, suits its habit best, and shows off its rich mauve-coloured bracts to the greatest advantage; but to get them in this shape they must be grown from the first much in the same way as a well-managed Fuchsia, in order that they may be thoroughly furnished with side branches. Before starting them into growth, these should be pruned back to a single bud, and those that are misplaced or superfluous should be thinned out, to allow plenty of room for the new growth. If placed where they can have plenty of light and full exposure to the sun, they make firm, short-jointed shoots from 1 ft. to 2 ft. long, laden with bloom. When in this condition, few plants are more valuable or effective for exhibition purposes or conservatory decoration, where, if properly hardened before being placed in a cool temperature, they will last at least two months in good condition, and their leaf-bracts will come much brighter coloured than if subjected to a closer and warmer atmosphere. Bougainvillea glabra flowers freely in a small state, and cuttings put in now will, if grown freely on during the summer, make useful plants for next season. Any of these that are planted out, or in large pots where they are making much growth, should have the weakest shoots thinned out, that the necessary light and air may be admitted to the others to induce plenty of bloom. As a pillar or roof plant in warm conservatories, it is most valuable, provided it can be planted in a light sunny position. B. speciosa will likewise stand in a house that does not go below 55°, if its roots can be accommodated with a little dry heat by having the plants near the boiler or pipes; and when that is the case it is the grandest plant that can possibly be introduced. The flowering of this successfully depends entirely on the thorough maturation of the wood now forming, and to give this every chance of becoming properly ripened, the plants must be kept freely thinned out during the summer, that every shoot may be fully exposed to the influence of sun and air. To check the exuberant growth these plants invariably make unless their roots are confined to a very limited space, they should only be afforded sufficient water to keep them from flagging severely, a course of treatment that has a very beneficial effect on them.

Gardenias.—To get these to flower freely next winter every encouragement must now be given in order to induce them to make free, vigorous growth. This may be accomplished by plenty of heat and atmospheric moisture, caused by shutting up early and syringing heavily whenever the weather favours such a course. A deep pit, where they can remain on a bed of fermenting material, will be found the best place for them for some time to come, as they delight in the genial moisture constantly arising therefrom. Any that have been cut back and are now making fresh shoots should have the earth surrounding the roots slightly reduced, and be re-potted in rough, fibry peat, after which they must be kept close and shaded for a time till they get hold of a new soil. Young spring-struck plants will require shifting on from time to time as they fill their pots with roots, that they may be got to a useful flowering size as quickly as possible. Gardenias are very subject to both scale and mealy bug, and will therefore require close watching to keep them free from such pests.

Winter-blooming Plants, such as Euphorbia jacquiniæflora, Poinsettia, Justicia flavicoma, Thyrsacanthus rutilans, and others of that class should now receive every encouragement to induce a free growth, and to enable them to attain a useful flowering size by the autumn. The first of these may still be propagated if a deficiency of stock be anticipated, as there is yet time to get plants of these struck and grown to a sufficient size to produce fine heads of bloom for cutting. When they are much in request for this purpose, a few planted out in a light airy position, tolerably close to the glass, to give them colour and substance, will be found of great use, as they branch off into numerous shoots that are sure to flower freely from being so well ripened. Many experience a difficulty in getting Euphorbia jacquiniæflora to root freely, and this is sure to be the case if the cuttings be not taken off with a heel, or be allowed to become too long before being planted. If taken off when they are about 4 in. long, with a thin slice of the old stem attached, they will be found to root readily if placed in a close propagating box, or where conditions are otherwise favourable. Poinsettias root freely if treated in the same way, and cuttings of these should be got in at once; for, if struck after thus, the bracts will be small and imperfect. Any that have been cut back, or others now rooted, should be kept well up to the light, to prevent the young shoots from becoming drawn, which they soon do if not fully exposed, or the plants are grown in too great a degree of heat, with an insufficient supply of air. Plants of this character, and many other soft-wooded, quick-growing stove subjects, can be best treated during the summer months by placing them in pits or low houses away from the general collection, in order that they may be more easily attended to.

Bouvardias.—To bloom these plants successfully, they require special treatment, and beds for their reception should now be prepared for their summer growth. A pit or frame, having a sufficient depth to place a few leaves or other fermenting material, for the purpose of affording a slight bottom-heat, will be found to suit them admirably, or any old half-spent hot-bed may be utilised in the same way. Bouvardias delight in soils that contain a quantity of decomposing vegetable matter, and, therefore, plenty of peat or leaf-soil should be employed to mix with the loam before planting—two-thirds of the former to one third of the latter, with the addition of a little sand, will suit their requirements. This should be placed to the depth of 6 in. or 8 in. on the bed of fermenting material, and the young plants turned out in it at the above distance apart, after which they must be kept moderately close and shaded for a time to give them a start. When they get fairly hold of the soil, plenty of air should be given them, and during favourable weather the lights may be left off altogether. A bed similarly prepared in a warm, sheltered position without bottom-heat will push them forward almost equally well; but in either case they must be properly supplied with water, and kept well syringed during the summer. Planted out and treated in this way, they make much finer plants than they otherwise would if confined to pots without requiring so much labour and attention. To induce a bushy, compact habit, the tips of the strong leading shoots should be nipped out occasionally if they appear to be taking the lead; but this should not be done after the middle of August, as all that form after that time should be left to grow and set for bloom. By the middle or end of September they should be lifted carefully for potting, in order to secure good-sized balls of earth round the plants. They should then be placed where they can receive a little bottom-heat and kept close for a time, after which they should be put into a cool stove or intermediate house for the winter, and in which they should have a light position near the glass. Bouvardias were at one time treated as ordinary greenhouse plants, but they never attained the same state of perfection as when grown freely by planting them out, and subjecting them to a fair amount of heat during the winter. Cuttings may still be put in, and, if subjected to a strong moist heat, will soon be rooted and fit for planting out. They are such useful, free-blooming plants, and afford such a variety of soft, delicate-coloured flowers so suitable for cutting or table decoration, that no garden having proper accommodation for them should be without at least two or three varieties. The best to grow are B. Hogarth, elegans, Queen of Roses, Maiden-blush, Vreelandi, Jasminiflora, and Bridal Wreath.

Stove and Greenhouse Ferns.

As the young fronds of these have now, in a great measure' attained their full size, more air must be gradually admitted to stiffen and harden the growth, which will render it more lasting if used in a cut state. Ferns are frequently kept too hot and close to be of any great use for cutting, or for the plants to be of much value for any other purpose than to remain in the house in which they are grown; but if subjected to a moderate amount of light, with as little shade as possible, they will be found in a much better condition at the end of the season and less susceptible to insects, such as scale and thrips, that are sure to attack them when subjected to unnecessary heat. To keep the atmosphere in a moist, healthy state, the plants should be syringed every afternoon just after closing the house, unless the weather should be dull and unfavourable, under which circumstances damping the floors or other available surfaces will suffice. Much watchfulness will now be needed to see that they do not become dry at the root, as when that occurs in a sufficient degree to cause flagging, the young fronds seldom recover. Tree Ferns require special care in this direction, as valuable plants may be spoiled for the season while the growth is young and tender, and the loss of a single frond causes a great disfigurement. If they be properly drained, water should be daily poured down their stems, or else they should be freely syringed.—J. Sheppard, *Wolverstone Park.*

Orchids:

Many of the Cattleyas and Odontoglossums will now be in flower, and should be placed in a cool, dry situation; if they be grown on a large scale, there should always be a small house or lobby adjoining the Orchid-houses for their reception when in flower, and the door of the Orchid-house properly so called should open into it. By this means the outer air is not admitted. Even where only a few Orchids are grown, a suitable place should be found for them when in bloom, otherwise plants which should last a month in flower will be destroyed in a week by being left in a damp growing-house. After the Cattleyas are out of flower, place them in a dry, airy, cool house to rest, giving them only sufficient water to prevent them from shrivelling. The Odontoglossums of the Alexandræ class will probably be a little shrivelled after the flowering is over, but they should not be rested like the Cattleyas; on the contrary, they should be placed in the cool Odontoglossum-house, where they will at once begin to grow, and should be freely supplied with water, and treated like those which are now growing. Plants of Dendrobium Falconeri lately imported have flowered freely with me, and exhibit considerable variety; about twenty plants of this species, which I had in the cold Odontoglossum-house, that sometimes fell as low as 40° last winter, either have flowered or are flowering; as soon as the plants are out of bloom they should be put in a warmer house, and, if possible, hung over the pathway and well syringed morning and afternoon; carefully attend to air and shade. The temperatures for Orchids during the month of June should be—East India or warm house, from 75° to 80° by day and 70° at night; Cattleya or intermediate house, from 70° to 75° by day and 65° at night; Odontoglossum or cool house, from 60° to 65° by day and 55° at night; the higher day temperatures are for sun-heat, and by this means the houses may even be allowed to get a few degrees higher, but care should be taken to increase the moisture in the atmosphere at such times by throwing water under the stages, &c. Those who have but one house should treat it as an intermediate house, and arrange the plants in the cooler or warmer end as they may require warm or cool treatment.—James O'Brien.

Roses.

Owing to the cold frosty winds which we have lately experienced the foliage of many of the more tender kinds of Roses has sustained considerable injury. Even Maréchal Niel has in many cases suffered from this cause, both shoots and flower-buds being much damaged. Where such has occurred the best plan is to encourage free growth. If kept clean by means of occasionally syringing, and watered with liquid manure about twice a week, they will soon outgrow their unhealthy condition. Roses on cordons, on ornamental trellises, and on lattice work, should be trained so as to have both blooms and foliage evenly spread over the whole surface requiring to be covered. Remove at once all spurious growth, and check any over-luxuriant shoots, both on standard or dwarf-trained trees, in order that the sap may be thrown into the flowering shoots. Dig up all suckers and tie and thin out the heads of Hybrid Perpetuals where too thickly wooded. Support young buds inserted last season so as to protect them from being blown off or broken by storms; shorten back the growth above the buds in order to throw as much strength into them as possible. If the bud itself be very robust, it may be allowed to flower, but if weak, remove the bloom. In most cases it is, however, best to pick out the bloom unless it is wanted for exhibition purposes, first flowers from recently-worked Briers being often very large and fine. If good bushy heads be wanted, stop the shoots as soon as they have made four leaves.—H. G.

Kitchen Garden.

Work now presses in every department; it will therefore be difficult to do everything at the right time; nothing should, however, be allowed to interfere with the thinning out of crops, or the planting out of Celery, Cauliflower, Cabbage, Broccoli, Lettuce, &c., during showery weather, as then much more of this kind of work can be done in a given time, and in a much more satisfactory manner than when the weather is dry. The recent rains have been most beneficial for all such operations, and Carrots, Leeks, Salsafy, Scorzonera, and Beet, will require to undergo the requisite thinnings, which may also be planted out if desired. On rich ground Beet is apt to grow too large, in which case transplantation is necessary to check growth. As soon as Onions are thinned, and when there is the prospect of a shower, give them a dusting of dry soot: this will prevent any attack of grub that may be imminent, and it also enriches the ground. To ensure large bulbs autumn-sown Onions should at this time be dressed with Guano, and well watered, or deluged with sewage, of which they are not easily satiated, and the same remark will apply to Cauliflowers and Lettuce; the two varieties of the latter that we grow here for summer supply do not require tying to blanch them, as both kinds heart like the hardest Cabbage without that operation, the sorts are Sutton's Superb Cos and Blonde de Berlin (Cabbage). Our rule is to plant the first batch of Snow's Broccoli on ground that has been cleared of the earliest Potatoes; but the season being so late, these will not be ready to be dug for some time yet; consequently the plants must be pricked off in a cool position, and transplanted with good balls of earth as the Potatoes are lifted. The ground does not require digging, the "clubbing" of Broccoli very rarely occurring in firm ground. Late sorts of Broccoli should now be sown, and the first batch of that invaluable Cauliflower, Veitch's Autumn Giant, be planted out, and a further sowing should now be made and grown on without check to produce a supply until Christmas. The early Cauliflowers are now turning in, and should the weather become hot, they will be quickly over; it will, therefore, be necessary to eke out the supply by lifting some of them when ready, and heeling them in under the shade of a north wall, or in a cool shed; they can also be preserved for some days longer in the same positions by partially lifting them with a fork, which, of course, stops growth, but a sufficiency of roots remain to keep them in condition for some time longer. As soon as all are cleared, a late crop of French Beans should be sown thereon, as no ground should ever remain idle, but every crop be made, so to speak, preparatory to the succeeding one. Successful plantings of Cauliflowers will require to be freely watered, much of which labour can be saved by mulchings of litter or grass, and it is real economy of labour to adopt this practice at the season for all kitchen garden crops. Peas, Runner Beans, Cauliflowers, and Lettuce, on our light soil all but refuse to grow without mulchings, and on heavy soils they are equally valuable to prevent the soil from baking and cracking. Runner Beans will now require staking, and as there is no good reason why they should be allowed to grow out of one's reach, stake them in the same manner as Peas, and pinch out the points of the bines when midway up the stakes; this will cause them to branch out, and (I think) makes them more prolific than if allowed to grow their full length. They do almost as well without stakes of any kind; we always grow some on a raised north border, and by keeping them pinched, and the Beans picked as soon as fit, I have for several years secured a supply the whole season through without successional sowings. The same treatment is not of course suited to dwarf French Beans, and therefore a small batch of these should be sown weekly to the end of the month. In the autumn Lettuce and Endive in quantity are always in great request where salads are valued, and now is the time to prepare for a supply. Endive, if sown too early, is apt to go to seed, and to obviate this the first sowing should be made on a north or east border, and allowed to remain where sown; later sowings will require warmer aspects. The best Lettuce for late autumn and winter supply is the Black-seeded Bath Cos; the first sowing of it should not be made till the end of the month, as the kinds above mentioned, and many others, are better suited for summer and early autumn use. The following may now be planted out:—Capsicums on spare places under south walls, a plan much preferable to growing them in pots, and there is no comparison as regards produce; Tomatoes also do well in such positions, but they are such gross feeders that it is ruinous to wall trees to plant near them; they should therefore be planted in the warmest and most sheltered part of the garden, and trained to a trellis: on a sloping bank with a south aspect, and a few sticks laid for them to rest on they thrive well. The soil for them should not be too rich, as then the tendency is to grow rather than fruit. Tender kinds of herbs may now be planted out, such as Sweet Basil, Sweet Marjoram, Knotted Marjoram, and Savory, for which any position is suitable if the soil be moderately rich: from 6 in. to 9 in. is ample room between the plants. Chervil requires to be sown several times in the course of the season, as it soon goes to seed; it should be treated in the same way as Mustard and Cress, only sown at longer intervals. Now that the garden is fully cropped the appearance of it will be much improved if the edgings and walks be kept trimmed and neat. Box edgings should therefore now be clipped, and if Box or tiles be not used, a good temporary edging may be made by sowing a row of Parsley or a dwarf kind of Beet.—W. Wildsmith, *Heckfield.*

South Park, Chicago.—More than a thousand acres of land have been purchased for this park, upon which work was commenced in earnest about three years ago. More than fourteen miles of sewers and drains, large and small, have been laid, and more than two hundred and fifty acres of flat, marshy ground converted into the finest lawn. The whole amount expended during that year was more than £150,000. The trees planted along the drive-ways are mostly Elms, but the cut-leaved weeping Birch has been found to succeed admirably, and many fine specimens of that beautiful tree were noticed. The plan includes a Botanic Garden, which was commenced in the spring of 1875, and in which, under the care of Prof. H. A. Badcock, more than three thousand species of plants have already been collected. The whole of these extensive parks is, however, but a part of a general plan to surround the city with a system of parks and boulevards, forming a drive of twenty-five miles in extent.

THE INFLUENCE OF BEAUTY.

MISS MIRANDA HILL lately delivered a lecture on "The Influence of Beauty on the Life and Health of the Nation," in the rooms of the Social Science Association, Adam Street, Adelphi. Miss Hill observed that the present was an age when men were seeking after beauty—the improvement in architecture, the increasing love of pictures and of music, the desire for decoration of churches, all showed that beauty was felt as a good in itself. Those who had had the happiness of passing their childhood in the country could fail to trace some of their holiest thoughts to impressions made by the scenes they then saw around them. All beauty of art, whether of music, or painting, or architecture, had in different degrees, perhaps, the same effect. To those who recognised a power for good in nature, poetry, painting, or music, it became a bounden duty to share with others the advantages they were able to obtain for themselves. Miss Hill then proceeded to speak of what it was possible for the higher classes and the better educated to do in the way of bringing healthy and ennobling influences to bear on those whose lives were for the most part laborious, monotonous, and generally destitute of any kind of amusement, except the merely exciting and sensational. She urged the giving of poor people, especially children, as much healthy outdoor amusement as possible, and spoke approvingly of the work done by the Ladies' Sanitary Association in organising the "park parties" for poor children. For grown-up people expeditions a little way into the country on Saturday afternoons would be a great good. There ought to be as many open spaces near to the homes of the townspeople as possible; and those spaces should be planted with trees and made beautiful with Grass and flowers. If leave could be obtained to lay out the now disused churchyards, and make them quiet resting-places for the living, it would be putting them to the best possible use. More general use for the benefit of the poor, she thought, might be made of the squares. As the beauty of the country was being allowed to recede more and more, towns ought to be improved as much as possible by beauty being brought into them. The cultivation of flowers had done much good, but that and the cultivation of window plants and plants out-of-doors ought to be extended. Great was the importance of making the towns more beautiful. Every year, as the population increased, the need of wild, open country increased. Outlets were wanted for the vast city populations—places where they could breathe freely, where they could look upon the wonderful works of Nature, where they could feel the blessedness of silence and solitude for a few hours. The rapid disappearance of so much of the wild country by the spread of building rendered it needful that all which could be saved for the higher enjoyment of the people should be saved.—"Queen."

NOTES AND QUESTIONS—VARIOUS.

Raising Rhododendrons from Seed.—I have been unsuccessful with seedling Rhododendrons, which I cannot get past the second or third leaf. The last I had remained nearly three months in the second leaf stage, and then, by degrees, grew smaller. How should I treat them?—NEW JERSEY. [In this country no trouble is experienced in raising Rhododendrons from seed. We prepare the seed-bed out-of-doors, using for it some rich peaty soil, mixed with friable loam, and sow in the month of May, keeping the young plants, when up, well watered and shaded.—J. W.]

New Large-flowered White Lilac.—Amongst shrubs at present in flower and worthy of special notice is Lilas alba grandiflora, the individual blooms of which are nearly twice as large as those of the old White kind. The bunch is about the same size, but the variety seems to possess the valuable quality of blooming in the form of young dwarf plants. The old White Lilac it may be remembered begins to flower only when the plants have attained a considerable size and height.—G. PAUL, *The Old Nurseries, Cheshunt.*

Evergreens for Damp Situations.—Your correspondent (see p. 492) might try some of the following:—Daphne Laureola, Rhododendron ponticum, Aucuba japonica, Box of various sorts, various kinds of Mahonias, Butcher's Broom, and Green Holly; without, however, seeing the situation in question it is impossible to specify exactly what would be suitable.—M.

The Best Garden Mouse-trap.—Permit me to correct an error which appears in my communication on this subject (see p. 490). In describing the glazed pots I am made to say about the size of a 24-in. pot; it should have been a 24-sized pot. I may add that it might be a convenience to many to substitute zinc for earthenware for that part of the apparatus, and I may also state that the trap may be used in root cellars, seed or fruit rooms, &c., by placing it on the floor plunged in a mound of dry earth, sawdust, or Cocoa-nut fibre.—HENRY A. WOOD, *Willow Lodge, Mitcham.*

Design for Horton Park, Bradford.—The "Bradford Observer" states that the offer by the Recreation Grounds Committee of the Bradford Town Council of two premiums of 100 guineas and 50 guineas respectively for the first and second best designs for the laying-out of Horton Park, brought into the field twenty-eight competitors, and, after careful consideration, the committee decided to recommend to the Council the Design bearing the motto "Toujours prêt" as being deserving of the first premium. It is generally understood that Mr. William Gay, landscape gardener, of Bradford, is the author of the first design.

SOCIETIES AND EXHIBITIONS.

ROYAL AQUARIUM FLOWER SHOW.

MAY 30 & 31.

THIS exhibition was the largest that has taken place this season, a fact attributable more to the liberal prizes offered on the occasion than to the suitability of the Aquarium for flower shows, for of all places it is the worst for displaying to advantage the beauty of plants and flowers. Everything was, however, done that could be done to make the show as attractive, in an artistic sense, as the site would allow, but the grouping, excellent though it was, cost both judges and reporters much extra labour and created not a little dissatisfaction on the part of many of the exhibitors; indeed, in one or two instances, the decision of the judges was successfully disputed, a result arising entirely from the difficulty of comparing and properly judging groups of plants set up in different ways and in different parts of the building. Among the more remarkable plants shown we may allude to a specimen of Ixora coccinea in Dr. Woodman's group of stove and greenhouse plants, sent from Exeter, and also to a remarkably well-bloomed plant of Stephanotis floribunda in the same collection; both of these were deserving of all praise, being excellent examples of really good culture and careful packing. The plant of Dracophyllum gracile, sent by Messrs. Jackson & Sons, of Kingston, was also a well-nigh perfect specimen of its kind. Orchids were fairly well represented, but they were placed too close to the pot Roses and Azaleas to be seen to advantage; indeed, of all plants Orchids require the most taste and care in arrangement as regards effect; they should only be contrasted with Ferns and similar plants, and never with flowers possessing bright and vivid colours. Among Orchids individually fine may be named Anguloa Clowesi, Calanthe veratrifolia, Cattleya Mendelli, Masdevallia Veitchii, M. Harryana, and Dendrobium lituiflorum in the first prize group, which was sent by Mr. O. O. Wrigley, from Bridge Hall, Bury. Mr. F. G. Wilkins, Leyton, furnished excellent specimens of Cypripedium Stonei, Epidendrum vitellinum majus, Odontoglossum Alexandræ, O. Pescatorei, and O. vexillarium, and also a good example of Dendrobium Devonianum. Mr. J. Douglas, Loxford Hall, had a well-bloomed plant of Cattleya Warneri in capital condition. The pot Roses from Mr. Charles Turner and Messrs. Paul & Son, though attractive, were rather past their best. New plants were shown in admirable condition by Mr. W. Bull, who obtained first prizes in all the classes, and also in those devoted to Crotons, Dracænas, and Palms, his plants in every case being remarkable for freshness of aspect and careful culture. Mr. B. S. Williams, Messrs. Rollisson & Sons, and Mr. H. Ley also sent good collections of new or rare plants. New plants, exhibited for the first time, were not particularly remarkable. Among those likely to be of permanent value may be noticed Martinezia Roezlii, a robust Palm with rich olive-green bilobed foliage set on short petioles and with rufous spines. Bomaria Carderi, a pink-flowered creeping Amaryllid, is also pretty. Gunnera granatensis, an example of which was shown, is a large habited plant, with dark green leaves, similar in shape to those of Anthurium regale, the petioles being very scabrous at the base. Croton Williamsii, although not strikingly handsome, is the most distinct break we have yet seen among new varieties, the broad and oblong green leaves being splashed with creamy yellow and silvery grey. Phajus fimbriatus is evidently a robust and tall-growing form of the old P. albus, its pseudo-bulbs being 5 ft. in length, and the flowers large in proportion. One of the most effective of all new Palms is Astrocaryum murmureum, a kind with dark glossy, bilobed, gracefully arching leaves, silvery beneath the downy petioles, being armed with stout, glossy brown spines. A new robust-growing Aralia, named A. splendidissima, also deserves notice. It has pinnate leaves, which are each fully a yard in length, radiating from the slender central stem. The classes for Azaleas, Heaths, and Pelargoniums, were filled with well-grown plants, and several good collections of Ferns, Palms, and other fine foliaged plants were distributed throughout the building.

Certificates.—These were awarded to the following new plants:—

Cattleya Bluntii (Low & Co.).—A stout-habited and distinct Cattleya, something in the way of C. gigas, but with white flowers, the lips of which are suffused in the throat with lemon yellow. The flowers are very large and beautiful, and the plant is sure to become popular.

Pellæa Ornithopus (Rollisson & Son).—A dwarf-habited Fern, having glaucous, finely-divided fronds, from 3 in. to 5 in. in length, these being produced in dense tufts, which measure from 5 in. to 6 in. across. It is very pretty and distinct, and is well deserving of culture.

Azalea indica imbricata (Mr. R. Thornton).—A pleasing variety of considerable merit, having white or blush-tinted flowers of good form and substance. It is a plant which well deserves attention both for decorative purposes and for exhibition.

Sarracenia Williamsii (B. S. Williams).—A strong-growing plant, something like S. flavia, but of more robust appearance. It is a distinct and well-marked kind, which, when more fully developed, promises to be an effective exhibition plant.

Adiantum Williamsii (B. S. Williams).—A distinct and handsome stove Fern, bearing dense green fronds in tufts measuring a foot or more across. The young growth is of a tender and pleasing green tint suffused with red. It looks as if it would become a decorative Fern of the highest value.

Pelargonium Zonale, Wonderful (G. Smith).—A most effective double-flowered sport from P. Vesuvius, which has already been certificated at all London shows. For pot culture or bedding it is decidedly the best variety of its class, and is already deservedly popular as a thoroughly useful decorative plant.

Silver tricolor Pelargonium, Empress of India (J. Pestridge).—A robust-habited and brightly tinted-silver tricolor, above average merit, and one which promises to be very useful, either as a pot plant or for edging purposes.

Brompton Stock, New Giant White (R. Dean).—A strong and compact-habited variety, bearing perfectly double white flowers in great profusion. It well deserves culture, not only for decorative purposes, but also for supplying cut bloom.

New Plants.—In the principal class for new plants, in or out of commerce, Mr. W. Bull, of Chelsea, was first, with one of the best groups we have yet seen, although, in this case, rather hidden under plants of a more ordinary kind. In Mr. Bull's group we remarked Bertolonia superbissima, with dark-velvety ruby-spotted foliage; Croton spirale and C. Disraelii, both effective kinds; a large and noble plant of the almost unique Pritchardia grandis; the zebra-striped Dracæna Goldieana, and the dark purple Artocarpus Cannoni; the elegant fresh green Pandanus princeps, and two or three Dracænas. Mr. B. S. Williams was second with the handsome Aralia Veitchii elegantissima, Anemia tessellata, Gleichenia rupestris glaucescens, Dracæna Hibberdii, Aralia elegantissima, and several new Palms and Cycads. Messrs. Rollisson and Sons were third with Vriesia reticulata, Pellæa Ornithopus, Goodyera velutina, and others. In the class for six new or rare plants, not before shown, Mr. W. Bull was first, with beautiful specimens of Smilax Shuttleworthii, Gunnera granatensis, a species with large Alocasia-like leaves, having scabrous petioles; Dieffenbachia majestica, evidently only a broad-leaved and good form of D. princeps; a large-growing Gymnogramma named G. Chelsoni, and a new golden-blotched Croton. Mr. B. S. Williams had Croton Williamsii, and C. Victoria, an effective crimson-stemmed golden variegated form, something like C. Weismannii in habit; Panax laciniatus, a cut-leaved species of elegant habit; Ficus ovalifolia marmorata, the large-leaved Jambosa acida; and Phajus fimbriatus, a large form of the better known P. albus. In the class for six new plants (Orchids excluded), Mr. W. Bull was first with Croton formosum, which is said to be a seedling from Veitchii, fertilised with pollen from C. Weismanni, Dieffenbachia triumphans, Dracæna Goldieana, Sadleria cyathoides, an elegant fresh green Fern; Croton trilobum, and Aralia splendidissima, a robust and graceful plant, having pinnate leaves a yard in length, the pinnæ being cut, and of a dark glossy green colour. In the class for three new or rare plants never before exhibited, Mr. Bull was again first with Dieffenbachia princeps, a long-leaved kind, having grey-green foliage, feathered with silver down the midrib, and irregularly, but distinctly blotched with apple-green. Martinezia Roezlii, a deep green Palm, fan-leaved in its present state, but doubtlessly irregularly pinnate when older, the base of its mid-rib and petioles being covered with rufous spines; and Bomarea Carderii, a scandent Amaryllid, with smooth ovate leaves, and bright, green-tipped, dark-speckled flowers. Mr. B. S. Williams was second with a dwarf Ixora named I. multiflora; a new pedate-leaved Adiantum, having reddish-tinted young growth; and a very distinct new Croton named C. Williamsii. This has glossy, bright green leaves, irregularly blotched, and margined with creamy-yellow. In the class for three new plants Orchids excluded) Mr. W. Bull was once more in the foremost rank with Dieffenbachia Carderii, a distinct plant, with dark foliage boldly blotched with apple green; Dracæna Goldieana, and the cut-leaved new Caledonian Aralia spectabilis. Mr. B. S. Williams was second with Woodwardia radicans cristata, Zamia intermedia, and Astrocaryum murmureum, a plant with glossy green bilobed leaves, silverybeneath, the petioles being also silvery, and set with stout, brown, toothpick-like spines.

Stove and Greenhouse Plants.—The best group of these came from Messrs. Lucombe, Pince, & Co., of Exeter, who had shapely and naturally trained plants of Aphelexis macrantha rosea, Ixora coccinea, in splendid condition, and Stephanotis floribunda, a mass of fragrant white flowers and fresh green foliage. From the same firm also came good plants of Erica tricolor impressa, E. Lindleyana, and large examples of Azalea Trotteriana (bright carmine), A. criterion (soft salmon-rose and white), and a well-bloomed plant of Clerodendron Balfourianum. The second prize was awarded to Messrs. Jackson & Sons, of Kingston, who had a superb specimen of Dracophyllum gracile,Statice profusa,one of the best of all the flowered exhibition plants; a very fine Aphelexis macrantha purpurea, the scarlet-spathed Anthurium, and several good Heaths, and Epacrises. Mr. B. S. Williams contributed a well-arranged group, to which a third prize was awarded. In the amateurs' class the premier award was assigned to Mr. J. Ward, of Leyton, who had, amongst others, good plants of Erica ventricosa coccinea minor, Ixora Williamsii, and a very remarkable large-spathed Anthurium Scherzerianum. Mr. Bull was first in the class for twelve Palms, the most distinct among them being Chamærops humilis nivea, Livistona altissima, Cocos Weddelliana, Calamus ciliaris, and Licuala peltata. In the class for six Crotons Mr. Bull was again first with large and admirably-coloured specimens of C. Cooperii, C. Imperiale, C. volutum, C. spirale, C. Weismanni, and C. majesticum. Mr. B. S. Williams had large and highly-coloured plants, which obtained the third prize. Mr. J. Harrow, gardener to H. Bessemer, Esq., Denmark Hill, had also six well-grown plants.

Orchids.—When a prize of £50 is offered for twenty specimen Orchids we expect to see some good plants shown, and on this occasion we were not disappointed, the best group being that furnished by Mr. O. O. Wrigley, of Bridge Hall, Bury. Among these Lancashire plants we noted the vivid magenta and carmine forms of Masdevallia Harryana, Angulosa Clowesi, bearing twenty or thirty yellow Tulip-like flowers; a good plant of the grassy-leaved Odontoglossum Phalænopsis, and a vigorous example of the chaste, white-sepalled, purple-lipped Cattleya Mendellii, bearing twelve flowers and buds; not the least inconspicuous plant in this group was a well-grown specimen of the old Thunia alba, bearing seven spikes of white flowers. Here, also, was a fine mass of Linden's Masdevallia, bearing about thirty flowers, also a plant of M. Veitchii, bearing twenty flowers and buds; and, in addition, splendid masses of Dendrobium lituiflorum and Odontoglossum Alexandræ, a fine mass, bearing twelve spikes, the beauty of this group being further enhanced by a well-flowered Calanthe veratrifolia, bearing from twenty to thirty spikes; a good Vanda suavis, with four spikes; Cypripedium caudatum, with eleven flowers, and a good pot of C. niveum, bearing fifteen pearly-white, lilac-spotted blossoms. The second prize was awarded to Mr. J. Ward, who had smaller specimens, but equally well grown and well bloomed. In this group we noted some excellent plants of Dendrobium McCarthiæ and the musk-scented D. Devonianum, also a fine plant of the rosy-purple D. Dayanum, Odontoglossum Pescatorei, bearing a large-branched spike of twenty-eight flowers; Epidendrum vitellinum majus, furnished with three fine spikes of bright orange-scarlet flowers, and excellent examples of Odontoglossum Phalænopsis, Masdevallia Veitchii, a very fine Cypripedium Stonei, and an equally fine Dendrobium thyrsiflorum; nor must we overlook a vigorous plant of the Foxbrush Aerides (A. Fieldingi), bearing three fine spikes. The third prize was awarded to Mr. J. Douglas, of Loxford Hall, Ilford, among whose plants we observed striking specimens of Cattleya Warneri, Saccolabium ampullaceum, bearing three spikes of purplish flowers; Masdevallia Veitchii, also with three flowers; and two very distinct forms of M. Harryana, the one with carmine, and the other with bright lilac-shot flowers. In the same group was Cypripedium villosum, well bloomed, C. spectabile with six spikes, Odontoglossum Andersonianum, and its ally O. Alexandræ, together with a well-bloomed Dendrobium Bensoniæ. Among the plants shown in competition for the smaller prizes in other classes, Mr. Ward had a good Odontoglossum vexillarium, bering twenty-four bright rosy flowers; a good plant of Aërides Lobbii; a distinct pale form of Skinner's Lycaste, and a vigorous form of Odontoglossum Alexandræ, bearing nine fine spikes. Mr. Wrigley had a good Miltonia Warscewiczii with six spikes; Odontoglossum citrosmum; a rich violet form of Masdevallia Harryana, and a good Bearded Lady's Slipper. Some effective plants of Cattleya Mossiæ, and C. labiata were also shown. In the nurserymen's class for twelve specimens, Mr. B. S. Williams was first, with good plants of Cypripedium barbatum, C. niveum, Lælia purpurata, Phalænopsis grandiflora, the blood-coloured Masdevallia Harryana, and a good variety of the bright orange-scarlet Epidendrun vitellinum. Mr. W. Bull was second with a small but very select group, among which we noted Odontoglossum Pescatorei, Cypripedium niveum, Oncidium concolor, a good specimen of Odontoglossum cordatum, and a distinct and pleasing form of O. Pescatorei in admirable condition. Messrs. Jackson and Son, of Kingston, and others, also showed in this class.

Hardy Plants.—These were well represented, not only by well-grown specimens in pots, but also by several beautiful collections of cut flowers. Among the pot plants we remarked large masses of seedling Irises, Iberis correæfolia, one of the best, a shrubby habited kind, ecah shoot being terminated by a dense conical tuft of pure white flowers; Dianthus hybridus was very effective in Mr. Parker's group, a mass of glaucous grassy leaves and rosy-fringed double flowers. Another very effective plant was Saxifraga Cotyledon, bearing tall branched conical spikes of white star-like flowers above green pearly-edged leaves. Perhaps the most curious and noteworthy plant in Mr. Parker's collection, however, was Pinguicula grandiflora, one of the prettiest of all wild British plants, bearing numerous large purple flowers, and fresh Apple-green leaves. Other noteworthy plants were Spiræa palmata, with bright rosy flowers, a fine mass of the bright yellow Globe-flower (Trollius asiaticus), and large potfuls of blue and rosy Scillas, and a plant of Orchis foliosa, one of the best of all half-hardy terrestrial Orchids, bearing twenty or thirty slender spikes of purple flowers. Mr. Roberts had large clumps of blue and white Lupines, Columbines, and a good potful of Pæonia officinalis, and in a fresh and healthy group of small plants sent by Mr. R. Dean we remarked Double Daisies, a good potful of the double white-flowered Saxifraga granulosa, and also of the lovely blue-flowered Lithospermum prostratum, together with Primula japonica, Campanula garganica, Cheiranthus alpinus, the scarlet-flowered Geum coccineum, and a panful of Daisy White Globe. In the class for eight Peonies Mr. Parker sent a splendid group. Among cut flowers we noted the mauve Phlox divaricata, one of the most elegant and lovely of all early summer flowers; Myosotis dissitiflora and London Pride (Saxifraga umbrosa), together with Golden Alyssums, Crimson Peonies, Blue Scillas, and large-flowered Irids.

Fruit—Grapes were represented by well-finished clusters of Madresfield Court, Black Prince, Muscat, Hamburgh, Grizzly Frontignan, and some of the best Black Hamburghs we have seenh us early in the season. Muscats and Foster's Seedling were also well represented. Large numbers of Melons were shown, the first prize being awarded to Gilbert's Victory of Bath, from Mr. J. Coleman. Pine-apples consisted of a few specimens of Queens and Mont serrats, but there was nothing equal in size or appearance to the Smooth Cayennes, now obtainable in Covent Garden Market. Peaches and Nectarines were sparingly represented, but of good quality, first prizes being given to Noblesse Peach and Hunt's Tawny Nectarine. Strawberries were represented by dishes of British Queen, Sir C. Napier, President, and Black Bess. Two splendid dishes of Elton and Black Circassian Cherries came from Mr. G. T. Miles; the best Figs came from Mr. Coleman.

No. 238.] SATURDAY, JUNE 10, 1876. [Vol. IX.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

THE MILTONIA-LIKE ODONTOGLOSSUMS.

THIS very beautiful section of the genus Odontoglossum so closely resembles the Miltonia in the appearance of their flowers that the first introduced (O. Phalænopsis) was originally named Miltonia pulchella. They are distinguished by their large flat flowers (mostly white or white with various shades of rose) and their light greyish-green pseudo-bulbs and leaves, and so distinct are they in character that even the most casual observer could not fail to see that all of them belong to one class. The sorts of this section at present known are but few, but the variations in colour in the flowers of different plants of the same species lead us to suppose that there are yet more of them to be discovered, and to hope that the day is not far distant when we shall receive other new and beautiful allied varieties. The representatives of this class are found to require under cultivation different treatment from most of the other Odontoglossums, and as some cultivators, unaware of that fact, have placed the newly-arrived O. vexillarium, &c., in the cold Odontoglossum-house, a few remarks on their culture may not be out of place.

ODONTOGLOSSUM VEXILLARIUM.—This splendid variety, upon which the energies of so many collectors have been concentrated for a long time, and, until recently with such ill-success, has now been received in this country in sufficient quantity to place it within the reach of all; it was first found growing on the western slopes of the Andes in New Granada by the late Mr. Bowmann, who sent some specimens of it to Europe, which unfortunately died during their transit; since that time several importations have been received, but among them very few living plants until within the last few weeks, when they seem to have arrived both in quantity and in good condition; it is, without doubt, the finest Odontoglossum ever imported, and grows from 8 in. to 12 in. in height; the pseudo-bulbs (which are from 1 in. to 2 in. in height, of a light greyish-green, oblong and rather flat, with a single leaf at the top, and from 4 in. to 6 in. at the base), are soft, and have but little fibre in them; hence the plants have been found so difficult of importation in a vigorous state; the leaves are of the same colour as the pseudo-bulbs, often tinged with rose, from ¾ in. to 1½ in. in width, elliptic-lanceolate, and rather acuminate at the points, and so arrange themselves as to give the plant at a distance the appearance of a Huntleya rather than that of an Odontoglossum. The flower-spikes are produced from the axils of the leaves of a mature growth, from one to three of them proceeding from each leader, each spike bearing from three to nine flowers, from 3 in. to 4 in. in length, and from 2 in. to 3 in. in width; the sepals are oval and rather pointed at the tips, of a soft rose colour, and the petals are of the same shape as the sepals, but generally of a slightly darker shade; the labellum is large, flat, and oval, deeply notched in front and narrowed at the base, where it again extends upwards into two small wings; it is of a delicate rose colour, lighter round the edge; the base of the labellum is white with a yellow blotch streaked with crimson, the white often running in a distinct and gradually narrowing band down to the cleft in front. From this description let us hope that many who have never seen the plant in flower, or even a figure of it, may be able to form some idea of its extraordinary beauty when in flower—a beauty so great as to earn for it the well-merited title of the Queen of Orchids. O. vexillarium succeeds best, and produces flowers of a better quality and in greater abundance when grown in the warm end of an intermediate or Cattleya-house all the year round, than in the old-fashioned Odontoglossum-house, and placed in such a position that air can be freely admitted without the plants being in a draught. It is best grown in a well-drained pot, in a mixture of eqnal proportions of good fibry peat, and living Sphagnum Moss, keeping the plants well above the rims of the pots, and top-dressing with living Sphagnum; a copious supply of rain-water should be given from the present time, when the plants are making new growth until the pseudo-bulbs are fully formed, afterwards administering a limited application during the season of rest, for this Odontoglossum, in common with the others in its section, does not thrive if allowed to get quite dry at any time; it also requires plenty of air and light without the direct rays of the sun, and if a full-grown specimen be put on the stage in the Orchid-house, it should be placed on an inverted flower-pot to bring it nearer to the glass; but if it be a small specimen or a freshly imported plant, it will be better to suspend the pot with the plant in it by means of wires or fasten it into a hanging basket with Moss. It is a very free-growing and profuse-flowering plant, and if but ordinary care be taken and the temperature be that of a genial intermediate house, there is little fear of losing it. Some Orchid-growers place this plant in the East India house during the growing season, but although it succeeds better there than in the cold Odontoglossum house, it is more likely to make weak unstable growths, and is found to be more liable to the attacks of thrips, &c., than when grown as recommended above.

O. WARSCEWICZI.—This very desirable plant bears a striking resemblance to O. vexillarium, except in the colour of its flowers and its slightly narrower leaves; in general appearance it is so similar to the latter-named variety that it is difficult to distinguish them apart when not in flower. It is a native of Costa Rica, and was first found by that discoverer of so many beautiful plants, the late Joseph von Warscewicz, a Polish gentleman, but the plants were so scarce, even in their native habitats, and of such a peculiar nature, that even he despaired of ever being enabled to forward any to Europe alive. Since that time several collectors have essayed to accomplish the task, but have failed, until at last Senor Endres succeeded in bringing a few over in good condition, the greater part of which are in the possession of the Messrs. Veitch, of Chelsea, or in cultivation elsewhere in this country. The flowers, which are not quite so large as those of O. vexillarium, are borne from three to five on a spike; their prevailing colour is a soft creamy-white, the sepals having small purple marks close to the column, the petals and labellum having blotches of various shades of purple at their bases and a blotch of yellow at the base of the labellum, the disposition and intensity of the colouring varying very much in different specimens. It thrives well when treated in precisely the same manner as that recommended for O. vexillarium, but care should be taken to keep it free from thrips, &c., by frequent sponging, and never to fumigate a house in which it is placed, for nothing is more injurious to the whole of this class of Odontoglossums.

O. ROEZLI is a beautiful variety, introduced by M. Roezl from New Granada; it grows about 9 in. in height; the pseudo-bulbs are narrower than those of O. vexillarium, which they resemble in other respects. The leaves, which are gracefully arranged, are generally about ½ in. in width; the flowers, which are borne well above the leaves on rather erect spikes, and number from two to four on a spike, are each about 3 in. in length and 2½ in. in width, and have much the same outline as those of O. Phalænopsis, and are delightfully fragrant; they vary greatly in the colour of the markings, some of the plants having pure white flowers, others white with a distinct dark purple blotch at the base of each petal, and a yellow blotch at the base of the labellum, while others are marked with yellow or orange at the base of each petal and the labellum, the colouring in the flowers of many plants varying in shades until a great number of varieties may be obtained from a single importation; but all are alike lovely, and the difference in the colouring rather enhances the value of the plant than otherwise, for the grower of several specimens can have them all differing from each other. This Odontoglossum is neither so costly nor so difficult to procure as the two previously described, a large assortment of them being procurable at almost all the large London nurseries. It should be grown in pots in good fibry peat, or fibry peat and Sphagnum Moss, and treated in the same way as the O. vexillarium, giving a plentiful supply of air and water during the growing season.

O. PHALÆNOPSIS.—This compact-growing species is the gem of its class, for, if not so majestic in appearance as the O. vexillarium, it is equally attractive, the large size and profu.

sion of its flowers, in proportion to the small bulbs and leaves, always exciting surprise and admiration. It is a native of Ocana, where it was discovered by M. Schlim, who first sent it to Europe; it was exhibited in London about twenty years ago, and since that time many importations of it have been received, of which the greater portion have succumbed to bad management; at present, however, its culture is better understood, and well-grown specimens are by no means uncommon—one in particular, exhibited by Mr. Ward at several exhibitions in London this year, may be regarded as a triumph of cultural skill. The plant is of tufted growth, from 6 in. to 9 in. in height, and unlike any of the others of its section in appearance: the pseudo-bulbs are from 1 in. to 1½ in. in height, oval, rather pointed, and compressed, bearing a single leaf at the top, and one on each side at the base of each pseudo-bulb; the leaves are less than ½ in. in width, grass-like and pale green; the peduncles rise from the base of the bulbs, and bear from one to four flowers on each; the flowers are about 2½ in. in length, and 2 in. in width; sepals ovate, somewhat pointed, pure white; petals same shape and colour, but rather broader; the labellum is flat, large, and panduriform, white marked with yellow in the middle, rosy-lilac lines radiating from the centre into the upper portion, the anterior part of the labellum being blotched and streaked with rose, a broad irregular margin of white running round it. The shades of colour differ in brightness in some plants of this species, but want of sufficient light when the flowers are forming and expanding is more frequently the cause of this than anything else. It should be grown with the other varieties enumerated in pots in fibry peat and top-dressed with Sphagnum Moss; and after the pseudo-bulbs are matured it should be rested in a drier and cooler house, but water should not be withheld, nor the temperature allowed to get too low.

These four varieties form a distinct and beautiful section of the genus Odontoglossum; they are all epiphytes, flowering generally in May and June, lasting about a month in perfection, and beginning their new growths soon after the flowering season is over. They look better, particularly O. Phalænopsis and O. Roezli, when grown in deep pans or half-pots: the ordinary flower-pot, being unnecessarily deep, detracts from the compact appearance of the plants. The chief requisites for the successful development of the plants of this section are light, air, and a temperate heat at all times, a plentiful supply of water and a moist atmosphere during the growing season, discreetly limiting the supply of water, and keeping the atmosphere rather dry during the season of rest. The plants should always be placed as near the glass as convenient, and frequently sponged. James O'Brien.

THINNING OUT OF FRUIT.

It is a popular notion that nearly all, if not all, fruit trees will only bear full crops every alternate year, and that this is a fixed law of nature. There is no real foundation for any such notion; for if the trees are properly cultivated they will bear regular crops of fruit every year, unless heavy frosts or other atmospheric disturbances injure the trees or destroy the blossoms. All cultivators who are proficients in their business understand this, and provide a regular supply of fruit, year by year, from the same trees. The three principal means by which they produce such results are by pruning, manuring, and thinning out the fruit. In all ligneous and in many herbaceous plants the flowers, fruit, and seeds are produced by the stores of material laid up within the plant during the previous season. Hence the necessity of encouraging and perfecting a strong and healthy growth, if we expect to obtain a fine crop of fruit the ensuing year. This cannot be obtained if the tree be exhausted by producing an overcrop. When allowed to overbear, it takes a whole year to recuperate and gather strength to bear another crop, and from this arises the fallacy that fruit trees can only bear a full crop of fruit on alternate years. The well-known law of animal life, that the reproduction of the species is the ultimate destruction of the individual, holds, according to "Harper's Bazaar," equally good in the vegetable world. But the exhaustive effects of this reproduction are found to be not so much in the pulp of the fruit and the sugar or other matters it contains as in the number of seeds or future germs of life which the plant produces. If the plant be prevented from reproducing itself in this way, its life may be greatly prolonged; and hence, if the flower-stems of a plant be cut off as soon as it has done flowering, the plant will increase in size and strength much faster than if it were allowed to produce seeds. If the seed-pods on a Rhododendron be not cut off as soon as the flowers drop, it will not flower well the ensuing year; and by cutting off the flower-stems of many annuals as soon as they have ceased flowering, they can be kept alive for two or three years. The prevention of this exhaustion of the plant by overbearing is partly obtained by judicious pruning, but more thoroughly by thinning out the fruit to such an extent as to leave no more on it than it can reasonably carry. This, of course, requires close observation of the habits and state of the tree on which the operation is performed. As a general rule, not less than one-third, and often one-half, should be removed, as Nature, in order to guard against the many accidents to which the young plant life is liable, provides a large excess of life-germs. This operation, strangely enough, does not lessen the actual weight of the crop produced, for it will be found on experiment that, although the number of fruit is greatly reduced, yet the remainder becomes so much larger, more pulpy and saccharine, as to equal the weight of the multitude of dry, small, tasteless fruits, which would have been produced had the whole crop remained on the tree. The proper time to thin out the fruit is just when the albuminous matter in the seed begins to harden. Hence, in this latitude it is best done for the Apple and Pear toward the end of June or the beginning of July; for the Peach and Plum, as soon as the outside shell of the kernel begins to harden. Of course thinning out and pruning are not universal panaceas for producing fine crops of fruits. It will be readily seen, from what we have said, that the plant must have something from which to obtain the material to support this exhaustive process of reproduction. This can only be obtained from the soil, which the tree soon exhausts of its supply of such material, unless it is replaced by continuous but moderate manuring. We do not, as a rule, grow fruits for the seeds, but for the pulp which generally surrounds them. To obtain this, we must arrest the production of seeds, and divert the matters drawn from the soil to the production of that which we want.

FLORAL DECORATIONS FOR JUNE.

Flowers are so plentiful and so various in colour throughout June, that it is difficult to know where to stop in making a list of those most suitable for decorative purposes. For bold effects, Rhododendrons in shades of crimson, pink, and white are unequalled; but they are only to be used below the line of sight. Irises, of various shades of purple, blue, mauve, yellow, and white, have a pretty appearance when arranged together, without the admixture of other flowers; they should be furnished with their own leaves, or with some other broad sedge-like foliage. Sweet Peas, in variety, will soon be available, and they also look better by themselves, arranged with a few deep green Grasses than mixed with any others, unless it be Mignonette. Our wild Grasses and Sedges are not half so often used in vases as they deserve to be; the taller and more noble species, which are now abundant in damp and marshy places in half-dry ditches, present a most effective display, and give a degree of lightness, grace, and elegance to an arrangement of flowers that nothing else can match. Pyrethrums are particularly useful for groupings which are to be viewed under artificial light, since their colours look even better then, if it be possible, than by daylight. The White Broom is exceedingly pretty for the tops of tall vases, provided it be used sparingly.

Blue—Cornflower, Gentianella, Iris, Myosotis, Nemophila, Pansy.

Purple—Anemone, Heliotrope, Iris, Pansy, Phlox, Sweet Pea, Verbena.

Mauve—Heath, Iris, Pansy, Wistaria.

Pink—Azalea, Begonia, Bouvardia, Carnation, Fancy Pelargonium, Fuchsia, Heath, Hydrangea, Oleander, Phlox, Pyrethrum, Rhodanthe, Rhododendron, Rose, Sweet Pea, Verbena, Zonal Pelargonium.

Crimson—Azalea, Bouvardia, Fuchsia, Phlox, Pyrethrum, Rhododendron, Rose, Spiræa, Sweet Pea, Verbena, Wild Orchis.

Maroon—Clove, Carnation.

Scarlet—Anemone, Bouvardia, Carnation, Poppy, Ranunculus, Tropæolum, Verbena, Zonal Pelargonium.

Orange—Carnation, Erysimum, Eschscholtzia, Rose.

Yellow—Alyssum, Azalea, Broom, Double Buttercup, Calceolaria, Coronilla, Eschscholtzia, Globe-flower, Gorse, Iris, Rose.

White—Alyssum, Anemone, Aponogeton, Arabis, Arum, Azalea, Begonia, Bouvardia, Broom, Double Buttercup, Carnation, Chinese Primrose, Deutzia, Eucharis, Fancy Pelargonium, Gardenia, Guelder Rose, Heath, Lily of the Valley, Mock Orange, Myosotis, Pink, Rhodanthe, Rhododendron, Solomon's Seal, Spiræa, Stephanotis, Sweet Pea, Woodruff.

W. T. T.

THE FLOWER GARDEN.

WATER-PLANTS IN THE WILD GARDEN.

WATER-PLANTS of northern and temperate regions, associated with those of our own country, add much beauty to a garden if well selected and well grown. A great deal of beauty may be added to the margins, and here and there to the surface, of ornamental water, by the use of a good collection of hardy aquatics arranged with some taste; but, so far as I have seen, this has not yet been fairly attempted by any designer of a garden or piece of water. Usually we see the same monotonous vegetation all round the margin, if the soil be rich; in some cases, where the bottom is of gravel, there is little or no vegetation, but an unbroken ugly line of washed earth between wind and water. In others, water-plants accumulate till they are a nuisance and an eyesore—I do not mean the submerged plants like Anacharis, but such as the Water Lilies, when they get matted together. A well-developed plant or group of plants of the queenly Water Lily, with its large leaves and noble flowers, is an object not surpassed by any other in our gardens; but when it increases and runs over the whole or a large part of a piece of water—thickening together and being in consequence weakened—and water fowl cannot make their way through it, then even the queen of British water-plants loses its charms. No garden water, however, should be without a few fine plants or groups of the Water Lily. Where the bottom does not allow of the free development of the plant, scrapings or earth might be accumulated in the spot where it was desired to encourage the growth of the Nymphæa. Thus arranged, it would not spread too much. But it is not difficult to prevent the plant from spreading; indeed we have known isolated plants and groups of it remain of almost the same size for years.

The Yellow Water Lily, Nuphar lutea, though not so beautiful as the preceding, is well worthy of a place; and also the little N. pumila, a variety or sub-species found in the lakes of the north of Scotland. Then there is the fine and large N. advena, a native of America, which pushes its leaves boldly above the water, and is very vigorous in habit. It is very plentiful in the Manchester Botanic Garden, and will be found to some extent in most gardens of the same kind. The American White Water Lily (Nymphæa odorata) is a noble species which would prove quite hardy in Britain. It is a pity this noble aquatic plant is not more frequently seen, as it is quite as fine as our own Water Lily. Rose-coloured varieties are spoken of, but I have never seen them.

One of the prettiest effects I have ever observed was afforded by a sheet of Villarsia nymphæoides belting round the margin of a lake near a woody recess, and before it, more towards the deep water, a fine group of Water Lilies. The beauty of this Villarsia is very insufficiently developed in garden waters. It is a charming little water-plant, with its Nymphæa-like leaves and numerous golden-yellow flowers, which furnish a beautiful effect on fine days, under a bright sun. It is not very commonly distributed as a native plant, though, where found, generally very plentiful, and not difficult to obtain in gardens where aquatics are grown.

Not rare—growing, in fact, in nearly all districts of Britain—but exquisitely beautiful and singular, is the Buckbean or Marsh Trefoil (Menyanthes trifoliata), with its flowers elegantly and deeply fringed on the inside with white filaments, and the round unopened buds blushing on the top with a rosy-red like that of an Apple-blossom. In early summer, when seen trailing on the soft ground near the margin of a stream, this plant has more charms for me than any other marsh plant. It will grow in a bog or any moist place, or by the margin of any water. Though a rather common native plant, it is not half sufficiently grown in garden waters. For grace and singularity combined, no water-plant can well surpass Equisetum Telmateia, which, in deep soil, in shady and sheltered places near water, often grows several feet high, the long, close-set, slender branches depending from each whorl in a singularly graceful manner. It grows in many parts of England, but does not penetrate far into Scotland. It will grow on the margins of lakes and streams, especially among water-side bushes, or in boggy spots in the shade.

For a bold and picturesque plant on the margin of water, nothing equals the great Water Dock (Rumex Hydrolapathum), which is rather generally dispersed over the British Isles; it has leaves quite sub-tropical in aspect and size, becoming of a lurid red in the autumn. It forms a grand mass of foliage on rich muddy banks, and, unlike many water-plants, has the good quality of not spreading too much. It is used with good effect on the margins of the islands in Victoria Park. The Cat's-tail (Typha) must not be omitted, but it should not be allowed too much liberty. The narrow-leaved one (T. angustifolia) is more graceful than the common one (T. latifolia). Carex pendula is excellent for the margins of water, its elegant drooping spikes being quite distinct in their way. It is rather common in England, more so than Carex pseudo-cyperus, which grows well in a foot or two of water or on the margin of a muddy pond. Carex paniculata forms a strong and thick stem, sometimes 3 ft. or 4 ft. high, somewhat like a tree Fern, and with luxuriant masses of drooping leaves, and on that account is transferred to moist places in gardens, and cultivated by some, though generally these large specimens are difficult to remove and soon perish. Scirpus lacustris (the Bulrush) is too distinct a plant to be omitted, as its stems, sometimes attaining a height of more than 7 ft. and even 8 ft., look very imposing; and Cyperus longus is also a desirable plant, reminding one of the aspect of the Papyrus when in flower. It is found in some of the southern counties of England. Poa aquatica might also be used. Cladium Mariscus is another distinct and rather scarce British aquatic which is worth a place.

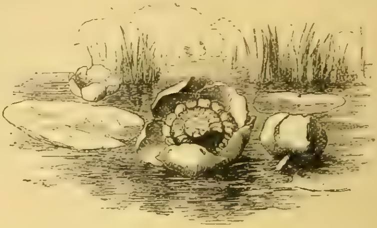
The White Water Lily.

If one chose to enumerate the plants that grow in British and European waters, a very long list might be made, but the enumeration and recommendation of those which possess no distinct character or no beauty of flower would be useless, for it is only by a judicious selection of the very best kinds that gardening of this description can give satisfaction; therefore, omitting a host of inconspicuous water-weeds, we will endeavour to indicate others of real worth.

Those who have seen the flowering Rush (Butomus umbellatus) in blossom, are not likely to omit it from a collection of water-plants, as it is conspicuous and distinct. It is a native of the greater part of Europe and Russian Asia, and is dispersed over the central and southern parts of England and Ireland. Plant it not far from the margin, as it likes rich muddy soil. The common Sagittaria, very frequent in England and Ireland, but not in Scotland, might be associated with this; but there is a very much finer double exotic kind to be had here and there, which is really a handsome plant, its flowers being white, and resembling, but larger than, those of the old white Double Rocket. This used to be grown in abundance in the pleasure gardens at Rye House, Broxbourne, where it filled a sort of oblong basin, or wide ditch, and looked quite attractive when in flower. It has the peculiarity of forming large egg-shaped tubers, or rather receptacles of farina, and in searching for these, ducks destroyed the plants occasionally. This makes me suspect that it might prove a useful plant for feeding wild fowl, and that it might be worthy of trial in that way. No native water-plant that I am acquainted with has anything like such a store of farina as is laid up in the tubers of this plant. Calla palustris is a beautiful bog-plant, and I know nothing that produces a more pleasing effect over rich, soft, boggy ground. It will also grow by the side of water. Calla æthiopica, the well-known and beautiful Lily of the Nile, is hardy enough in some places if planted rather deep, and in nearly all it may be placed out for the summer; but except in quiet waters, in the south of England and Ireland, I doubt if it would make any progress. However, as it is a plant so generally cultivated, it may be tried without loss in favourable positions. The Pine-like Water Soldier (Stratiotes aloides) is so distinct that it is worthy of a place; there used to be a pond quite full of this at Tooting, and it is common in the fens. The tufted Loose-strife (Lysimachia thyrsiflora) flourishes on wet banks and ditches, and in a foot or two of water. It is curiously beautiful when in flower; rather scarce as a British plant, but found in the north of England and in Scotland. Pontederia cordata is a stout, firm-rooting, and perfectly hardy water-herb, with erect and distinct habit, and blue flowers, not difficult to obtain from botanic garden or nursery. The common Acorus, or Sweet-flag, will be associated with the Water Iris (I. Pseud-acorus), the rather ornamental Water Plantain (Alisma Plantago), and the pretty Alisma ranunculoides, if it can be procured; it is not nearly so common as the Water Plantain. The pretty and interesting little Star Damasonium of the southern and eastern counties of England is very interesting, but, being an annual, is not to be recommended to any but those who desire to make a full collection, and who could and would provide a special spot for the more minute and delicate kinds. In such a spot, or even in the basin of a fountain, where they should be safely watched from being choked by larger weeds, the very tiny and pretty yellow Water Lily (Nuphar Kalmiana), the little pale blue Water Lobelia (L. Dortmanni), and not a few others, might be grown. This Lobelia does not seem to thrive well away from the shallow parts of the northern lakes, getting choked by the numerous water-weeds. Aponogeton distachyon is a native of the Cape of Good Hope, a singularly pretty plant, which is nearly hardy enough for our climate generally, and, from its sweetness and curious beauty, a most desirable plant to cultivate. It frequently succeeds in the south in water not choked by weeds or foulness, and wherever there are springs that tend to keep the water a little warmer than usual it seems to thrive in any part of the country. It should be planted in a clean spot and in good soil. The Water Ranunculuses, which sheet over our pools in spring and early summer with such silvery beauty, are not worth an attempt at cultivation, so rambling are they; and the same applies to not a few other things of interest. Orontium aquaticum is a scarce and handsome aquatic for a choice collection, and as beautiful as any is the Water Violet (Hottonia palustris). It occurs most frequently in the eastern and central districts of England and Ireland. The best example of it that I have seen was on an expanse of soft mud near Lea Bridge, in Essex, where it covered the surface with a sheet of dark fresh green, and must have looked better in that position than when in water, though doubtless the place was occasionally flooded. Polygonum amphibium and P. Hydropiper frequently flower prettily by the sides of streams and pools, while the Marsh Marigold (Caltha palustris), and its varieties will burnish the margins with a glory of colour which no exotic flower could surpass. A suitable companion for this Caltha is the very large and showy Ranunculus Lingua, which grows in rich ground to a height of 3 ft. or more. Lythrum roseum superbum, a beautifully coloured variety of the common purple Loose-strife, and Epilobium hirsutum, are two large and handsome plants for the water-side.

When to the above, and many others, are added the various noble Ferns of America and Europe that thrive by the water-side (the Osmundas, for example), a beautiful garden is the result. If with this water-garden we combine the wild garden of land—herbaceous plants, trailers, &c.—some of the loveliest effects possible in gardens will be produced. The margins of lakes and streams are happily not upturned by the spade in winter; and hereabouts, just away from the water-line, almost any vigorous and really hardy flower of the thousands now in our gardens may be grown and will afterwards take care of itself. The Globe-flowers alone would form beautiful effects in such positions, and would endure as long as the Grass. Near the various Irises that love the water-side might be planted—those that thrive in moist ground—and they are many, including the most beautiful kinds. Among recently-introduced plants we think the singular Californian Saxifraga peltata is likely to prove a noble one for the water-side, its natural habitat being beside mountain water-courses, dry in the autumn when it is at rest; both flowers and foliage are effective, and the growth very vigorous when in moist ground. It would require a very long list to enumerate all the plants that would grow near the margins of water, and, apart from the aquatics proper; but enough has been said, we hope, to prove that, given a strip of ground beside a stream or lake, a garden of the most delightful kind could be formed. The juxtaposition of plants inhabiting different situations—water-plants, water-side plants, and land-plants thriving in moist ground—would present what would, in many cases, be so undesirable—a general admixture of the whole. Two distinct classes of effects would be obtained, the beauty of the more delicate flowers seen close at hand, and that of the more conspicuous kinds in the distance or from the other side of the water of a stream or lakelet.

W. R.



The Yellow Water Lily.

The Great Water Dock.

Clapham's Strain of Mimuluses.—I have had a quantity of these beautiful Mimuluses in flower for some time, and their flowers are so large and so richly coloured as to make them scarcely inferior to the Calceolaria in richness and beauty. The flowers resemble those of a single Petunia in size; some have white, some orange, and some pale yellow grounds, and all are richly blotched. The seed was sown in a pan late in October, and about Christmas the strongest plants were pricked out into small pots, making a couple of batches, the smallest being kept for planting out into the open ground at the end of May. The first lot next got a shift into 48-sized pots, and finally into 24-sized pots, in which they flowered in perfection. As soon as the weather gets at all warm they should be placed in a cool frame, facing the north, and when in flower should be kept in a cool house, where they will bloom abundantly for a long time. Watering must be attended to, for if allowed to get dry at the root, a check will be the result.—D.

New Hybrid Perpetual Rose—Duke of Connaught.—This is an English seedling, raised in the old nurseries at Cheshunt, and exhibited last summer for the first time, when it received much attention on account of its full form and brilliant colour. It is a seedling from Madame Victor Verdier, and somewhat resembles that variety in foliage and general habit; its colour, however, is the nearest approach to scarlet of any variety yet raised. This season Messrs. Paul and Son have exhibited plants of it in flower, and also cut blooms, both at the Regent's Park and South Kensington Exhibitions, and on both occasions it was deservedly awarded first-class certificates. In the last number of the "Floral Magazine." there is a coloured representation of it.

Daisies.—As these are now very properly admitted to the prominent place to which they have long been entitled, it may be interesting to know that I met with the largest Daisies I ever saw, and of which there were a profusion flowering in autumn, near Mentone, on the road to Nice. Are the little flowerets which bloom all round the parent white Daisy so often seen in cottage gardens, ever found round the red double one? This inquiry has hitherto invariably been met by a negative; also, does the white Daisy, when transplanted and become double, produce those flowerets commonly known as Hen-and-Chickens? And, lastly, is it an invariable result of transplanting wild Daisies that they become double? as such a result, though very convenient and desirable in some situations, is the reverse in others, where a border of single Daisies would be preferable. Is there therefore no means of controlling the growth of this flower? Those hitherto transplanted by me have all become double in a certain time, but none have produced Hen-and-Chickens.—B. [The peculiar form of inflorescence known as Hen-and-Chickens, is limited to the variety so-called exclusively. The wild Daisy has never become double with me, but it is not improbable that plants of it growing in good garden soil may at times produce a superabundance of petals, but not sufficient to entitle them to be called double. Seed saved from such plants might eventually produce semi-double flowers, but it should be remembered that Daisies thus produced under cultivation and selection, would be no longer wild but garden varieties. As double Daisies seed less freely than single ones, that circumstance should be rather a recommendation for garden use than otherwise, inasmuch as the wild single Daisy, however pretty, is after all only a weed in gardens and soon becomes a nuisance; besides, in no case does it look more beautiful than when seen growing in its native pastures.—A. D.]

Clematises for the Wild Garden.—Mr. Jackman has given us the following list of the kinds of Clematis most likely to thrive in the wild garden—that is to say, the strongest growers, and those most likely to take care of themselves. They consist of the white, Wood-anemone-like C. montana; Aureliana, delicate mauve-purple; Fair Rosamond, blush white with a somewhat indistinct wine-red bar up the centre of each sepal, the stamens very prominent and distinct; John Murray, a remarkably free-growing and free-blooming variety, flowers eight-sepaled, of a deep purplish mauve, becoming reddish towards the base of the bar; Lord Derby, previously described in The Garden; Lady Londesborough, silver grey, with pale bar; Patens (azurea grandiflora), delicate mauve-lilac; Sir Garnet Wolseley, already described in our columns; Standishii, light mauve-purple; Stella, flowers light violet or deep mauve, with a distinct bar in the centre of each sepal of a deep reddish plum colour; The Queen, delicate lavender or mauve, having much the appearance of moderate-sized blossoms of C. lanuginosa; Vesta, and Countess of Lovelace, described at p. 408; Lucie Lemoine, white rosette-formed, with pale yellow anthers; Gem, deep lavender-blue; Lanuginosa candida, tinted greyish white; William Kennett, deep lavender; Crispa (Shillingii), pinkish white, bell-shaped; Hendersoni, bluish purple, bell-shaped; Lady Bovill, greyish blue, cupped; Mrs. James Bateman, pale lavender; Thomas Moore, violet, with white stamens, Passiflora-like; Viticella major, reddish plum colour; Viticella rubra grandiflora bright claret-red; Alexandra, pale reddish violet; Flammula, white, sweet-scented, small-flowered; Jackmanni, intense violet-purple; Lady Stratford de Redcliffe, a novel variety of the mixed type, somewhat of the character of the Jackmanni group, flowers eight-sepaled, measuring fully 6 in. across, of a delicate mauve colour with a greenish tint in the centre bar or rib, the anthers chocolate red, soon becoming greyish; Prince of Wales, deep pucy purple; Rubella, rich claret-purple; and Velutina purpurea, blackish mulberry.

The Lacrosse Flower Vase.—This vase is a recent novelty invented and registered by Messrs. Whyte & Sons, glass manufacturers, Dublin, a firm well-known as the inventors of the celebrated Lady Spencer Flower-stand. The principal advantage claimed for this novelty, says the "Gardeners' Record." is that it cannot be upset, for the bottom portion of the vase is a solid ball glass, which renders it so steady that it is not, like the ordinary form of finger or flower-glass, liable to be overturned on the table by a slight shake or touch. It is so constructed that even when purposely turned over the upper portion of the glass falls so lightly on the table that it did not break. The great objection to small glasses of this description is their tendency to overbalance themselves when flowers are arranged in them.

Tree Ferns Hardy in Arran.—A communication, relating to this subject, was lately made by the Rev. D. Landsborough to the Botanical Society of Edinburgh. "On both sides of a house at Corrie, on the east side of the island," he says, "I noticed remarkably sheltered corners; in one of these, in 1867, I placed a small plant of the great Australian Tree Fern, Dicksonia antarctica, and in the other a similar plant of that most beautiful of all Tree Ferns, the silvered Cyathea dealbata. The Cyathea grew beautifully during the summer, stood the winter perfectly, but was afterwards stolen. The Dicksonia is now provided with nine fronds, of which the largest is 4 ft. in length by 22 in. in breadth; it makes two growths in the year, sending out fronds in April and May, and again others in September and October. It is of course an evergreen, and looks better in winter than in summer, as in winter all the fronds are of full size. It has not yet begun to form a stem, but I understand that even in its native clime it does not begin to do so till it has grown for about a dozen years. I may add, that it is somewhat doubtful if it will continue to thrive as well as hitherto, for within the few last weeks a magnificent Strawberry tree, Arbutus Unedo, which sheltered it from sun and wind, has been blown down."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Striking Pinks in Water.—It has recently been found that Pink pipings strike freely tied up in small bundles and placed in water. When the roots are well developed, the pipings should be pricked out into a frame or under hand-lights until they are strong enough for moving into pots or borders.—A. D.

Tree and other Peonies.—Peonies of all kinds, both herbaceous and Moutan, are now very beautiful in London gardens. At Hampton Court they are just now gorgeous, both in beds and borders, margined with London Pride (Saxifraga umbrosa) a most effective arrangement. Here also P. Moutan, a delicious rose-scented variety of a soft blush tint, is very attractive.—B.

Alliums.—Dr. Regel has lately published an extensive work on this genus, which forms a volume of more than 250 pages. There are no fewer than 263 species of Allium. The greater number belong to the region of the Mediterranean, to the East and Japan, and many of them are of horticultural interest.

The Great Double Buttercup.—This is now so splendid in London gardens that we again call the attention to it, its flowers being in some cases as large as those of a Persian Ranunculus, beautifully formed, very double, and like burnished gold. It is known by various names in gardens such as Ranunculus speciosus fl.-pl., R. bullatus fl.-pl., R. Gouani fl.-pl., but the best garden name for it is that which heads this note.

A Graceful Mixture.—I noticed the other day some young stems of the Wood Horsetail (Equisetum) coming up through a large tuft of Stellaria in flower, the Equisetum resembling delicate miniature weeping trees growing over the snowy mass of bloom. Such combinations suggest what artistic gardening may come to when we really use tastefully the mass of material at our disposal.—V.

Flowers Grown in Churchyards.—As the custom of decorating the interiors of churches is becoming more common, we would suggest, at least in the country, for each church to grow its own flowers, and thus accomplish two ends—decorating both the church and churchyard. In many country and suburban churchyards there is plenty of room in which even the choicest flowers might be grown in quantity.

New Poppy.—Mr. Thompson's new Poppy (Papaver umbrosum) has just opened its first flower here and is singularly beautiful; the flower is about the size of that of P. Rhœas, dark red in colour with large black blotches in each petal both inside and out, and inside they (the blotches) are edged with a peculiarly pretty tint of grey. The leaves and habit are very like those of P. Rhœas, and I have no doubt it is an annual.—J. G. Wilson, *Aldborough, Norwich.*

Sundews.—I have been reading in The Garden an account of some experiments that were made with the common Sundew (Drosera rotundifolia). I should be pleased to supply any of your correspondents with specimens of that plant, having plenty of it near me.—Jas. Gibbs, *Chartham Park, East Grinstead.*

THE DANDELION.

Whether we consider the Lilies of the field or not, it is strange how few of us consider the early Dandelion by the way-side. And yet it is the very foot-print of spring herself, and whenever we see the Dandelion we know that she has passed that way. But we waste none of our ecstacies on the blossom. It has not the spicy savour of the Mayflower, nor the rich shadow of the Violet, nor the delicate fibre of the Anemone. We do not pluck it for our vases; we should laugh at ourselves if we wore it for a breastknot: yet, after all, find us a lovelier diadem than these wide open golden stars would make below the dark braid. Examine it well, and see if more filmy beauty can be found than that of each one of the tiny flowerets; and for its purposes, coming to brighten a dark and weary land still sad with the chill of departing winter, is not the splendour of its tint a better thing than all the purples that, a month later, when the scene is sunny and serene and secure, come and line the brook's side, and embroider the mill? But if we elders do not appreciate it, children do. That child has never yet been born who did not love the Dandelion. To children even the Rose is less welcome, and Orange and Jasmine could give them no blossom half so choice. Its colour, its wildness, its abundance, its little worth in our eyes, are all dear to them. When they see it they know the long out-door freedom of summer pleasures has begun. They hail it with acclamation, they carry it in their little warm hands till it wilts, they make curls from its long pliant stems to hang around their ears, they stick it in old bottles and broken pitchers, they set it out rootless but blossoming in their miraculous flower-beds, and they tell their fortunes by its blowing dust when it has gone to seed. It is as much their friend and the companion of their play, as the household dog is. The children, too, are right. It is we whose eyes are shut, we do not see the perfect circle, the multitudinous petals fringed fine as the Gentian's, the dusty delicacy of the tissue. It is so common that we give all this loveliness nothing but contumely, and we never stop to think of the exquisite work shut up in its corolla, with the only poet who to our knowledge, has ever sung its praises:—

"Gold such as thine ne'er drew the Spanish prow
Through the primeval hush of Indian seas,
Nor wrinkled the lean brow
Of age to rob the lover's heart of ease,
'Tis the Spring's largess, which she scatters now
To rich and poor alike, with lavish hand,
Though most hearts never understand
To take it at God's value, but pass by
The offered wealth with unrewarded eye."

De Candolle on the so-called Carnivorous Plants.—M. Casimir De Candolle has lately published a memoir on the structure and movements of the leaves of Venus' Fly-trap (Dionæa muscipula), in which, after describing the structure of the plant, he arrives at the following conclusions:—1. That the animal matters absorbed by the leaves are not directly made use of by them and are not necessary to the development of the Dionæa. 2. That the marginal appendages are distinct from the rest of the leaf, and hence the reason why their movements do not take place simultaneously with those of the two halves of the blade of the leaf. 3. That the star-shaped hairs, like the glands, are epidermal productions only, while the parenchyma of the leaf has a share in the development of the sensitive hairs. 4. That stomata exist on both sides of the wing petiole, while on the blade of the leaf they occur on the lower surface only. 5. That the anatomical structure, like the development of the different parts of the leaf, favours the hypothesis that the movements of the two halves of the leaf result from variations in the degree of turgescence of the cellular portion of the upper surface of the leaf. 6. That the sensitive hairs are conductors, which permit the impressions they receive to act directly on the cellular tissue of the leaf beneath the epidermis.

Tropical Fruits in Egyptian Gardens.—According to M. Delchevalerie, writing in the "Bulletin Société d'Acclimatation" the Rose Apple ripens its fruit perfectly in the gardens of the Khedive at Ghezireh. It bore fruit for the first time in Egypt in 1868, and there are trees now over 25 ft. in height. The Mango fruits abundantly in the gardens of Cairo, and the fruit is of delicious flavour. The largest trees are about 30 ft. high. Several varieties of Papaw flourish at Alexandria and Cairo. The Sweet-sop is cultivated in almost every garden, and the Arabs call it the Cream-fruit. Other trees and shrubs grown for their fruits are Ægle Marmelos, Eriobotrya japonica, Eugenia australis, Musa sinensis, Persea gratissima, the Guavas, and the Tamarind. These are mostly of recent introduction; various other tropical fruits have been grown for a long period in Egypt.

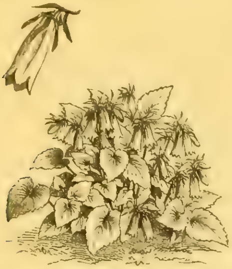
HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

The majority of spring-flowering bulbs have passed away, and leave considerable blanks, except in the wild garden, where they are not missed. The noble summer bulbs, mostly Lilies, have not yet opened, but there is a magnificent glow of colour in well-stocked gardens. Many showy plants are now in blossom, none more important than the various Thrifts, best of all being the pure rose-coloured and white forms of the native species. The variegated Irises are now very showy and beautiful; so, too, are the Peonies, though less attractive than usual owing to the severe spring. Many Saxifrages show their myriads of starry blossoms, and the Pyrethrums (double and single varieties of P. roseum) are effective where well chosen and well grown. Among these, however, there are too many intermediate forms which tend to produce monotony. The aim of nurserymen and hybridisers must for the future be the weeding out of those when too numerous, and the cultivation of really distinct ones. It is hard to say that any form of Iris, or Daffodil, or Lupine is not valuable, as these are certainly all beautiful flowers; but the fact is a number of similar forms slightly varying tend to weaken the effect of the distinct ones, and make the task of selection more difficult for the gardening public, and, therefore, are injurious to horticulture. It is common at present, for example, to see masses of seedling and hybrid Irises in gardens and nurseries without any distinct character, and no striking beauty of colour, while the really stately rich-coloured and distinct kinds are far too scarce. The double Marigold is very fine just now, its colour being a good successor to the handsome orange blooms of the Japan Globe-flower. The Bohemian Comfrey is one of the handsomest plants of the season, and very fine as a border plant. The smaller Phloxes are for the most part past, the family, however, being well represented by Phlox ovata, now in full bloom, and about a foot high. Some of the so-called tree Lupines, begin to be effective, and we notice some pleasing lilac-coloured forms among them. Nothing can be more lovely than the large delicate rose blossoms of Geranium cinereum, rising from very inconspicuous plants. The shrubby sea-green Veronica pinguifolia is a very distinct and neat rock or border plant, now in flower. The following are among the plants noted on Monday last:—Veronica caucasica, Silene quadrifida, Erigeron Roylei, Chrysobactron Hookeri, Convallaria bifolia, Dianthus alpinus, Aquilegia glandulosa, A. olympicum, Crepis aurea, Geum montanum, Geranium cinereum, Edraianthus Pumilio, Erodium macradenium, Hedysarum obscurum, Ranunculus uniflorus, Pisum maritimum, Tradescantia virginica, Phyteuma orbiculare, Crucianella stylosa, Erigeron Philadelphicum, Veronica saxatilis, Viola heterophylla, Phlox ovata, Allium ciliatum, Erodium Manescavi, Calendula officinalis, fl.-pl., Muscari comosum, M. c. monstrosum, Iris longipetala, Primula luteola, Orobus aurantiacus, Dianthus deltoides, Lychnis Lagascæ, Rosa pyrenaica, Campanula nobilis, Veronica pinguifolia, Alyssum spinosum, Melittis Melissophyllum, Linum arboreum, L. campanulatum, Astragalus monspessulanus, Æthionema grandiflorum, Lilium colchicum, Aster alpinus, Lotus corniculatus, Symphytum bohemicum, Veronica prostrata, Rudbeckia Newmannii, Scabiosa montana, Veronica caucasica, Lactuca sonchifolia, Hemerocallis japonica, H. flava, and Aquilegia chrysantha.

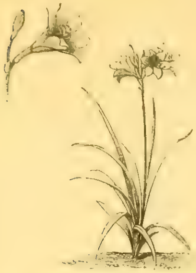
Source of Latakia Tobacco.—Mr. Thiselton Dyer exhibited, at a late meeting of the Linnean Society, specimens of Latakia Tobacco, which has hitherto been considered to be the produce of Nicotiana rustica. By soaking out the constituent parts it was found to consist of the upper part, inflorescence, and young capsules of a form of N. Tabacum. The peculiar flavour is given to this Tobacco by the smoke of the wood of Pinus halepensis, in which it is suspended for some months.

Asarum canadense as an Aromatic.—The roots of this form an officinal drug, which is in the secondary list of the United States Pharmacopœia, and is known under the popular names of Wild Ginger, Indian Ginger, Colt's-foot root, and Canada Snake root; it is used instead of Ginger by the country people in some parts of New England. On account of its medicinal properties, it has been noticed by American writers on native medicines; but it seems to be little used in regular practice.

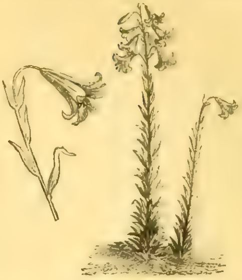
Physalis peruviana.—Dr. Sagot, who has paid much attention to these berry-bearing plants, recommends horticulturists in the south of Europe to cultivate this species, which is one of the best of the genus for flavour and perfume.



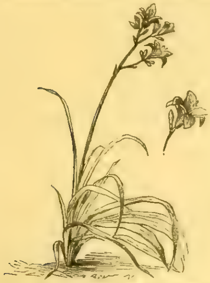
Long-flowered Harebell (Campanula nobilis).



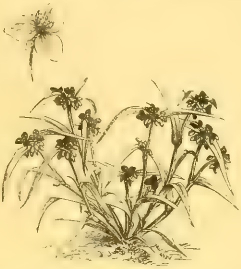
Yellow Day-lily (Hemerocallis flava).



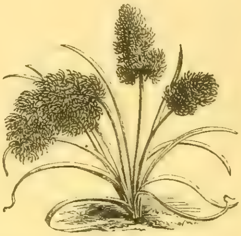
Caucasian Lily (Lilium monadelphum).



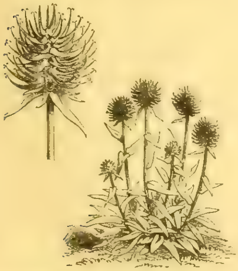
Tawny Day-lily (Hemerocallis fulva).



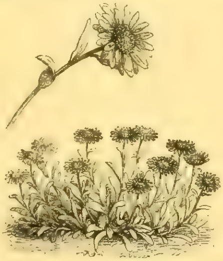
Virginian Spiderwort (Tradescantia virginica).



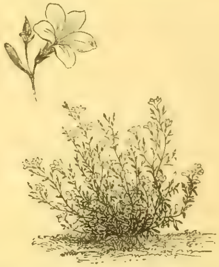
Feathery Hyacinth (Muscari comosum).



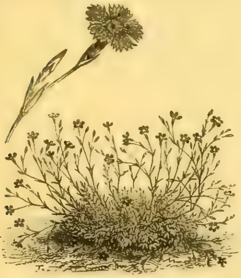
Round-headed Phyteuma (Phyteuma orbiculare).



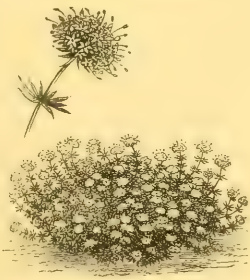
Blue Daisy (Aster alpinus).



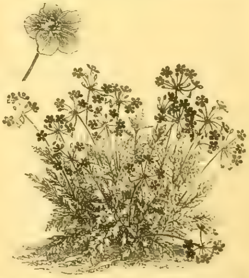
Bell-flowered Flax (Linum campanulatum).



Maiden Pink (Dianthus deltoides).



Long-styled Crucianella (Crucianella stylosa).



Showy Heron's-bill (Erodium Manescavi).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Insect Remedies.—The greatest discouragement which amateurs experience in their first attempts at gardening is the struggle necessary to cope with the numberless insects that make their undesired appearance upon almost every plant in cultivation, indoors and out, and that demand increasing attention to prevent the total destruction, or injury to a serious extent of whatever they prey upon. One of the first essentials to success in gardening is to fully realise the fact that an assiduous and continuous warfare must be waged against the different insect-pests which are constantly attacking the greater portion of plants in cultivation, either at the root, the top, or both. Whenever there is any delay in taking means for their destruction, not only are the affected plants sure to be proportionately injured, but the difficulty of extirpation is generally increased to an extent that could not be credited by the uninitiated. This will be easily understood by a little reflection upon the rapidity of increase in most of the insects that are more prevalent in summer. If the few curled leaves on the first shoot or two of a Peach or Cherry tree on the walls, or the young growths of a Rose, be at once effectually syringed or dipped in Tobacco or Quassia water, or dusted with Tobacco powder, the work that afterwards would take hours to accomplish may be completed in a few minutes, with the additional advantage of the plant receiving but little injury, whereas if it be delayed the leaves turn yellow and fall off, the flowers come deformed and useless, and the insects spread all over the tree or bush, entailing immeasurably more difficulty in their removal, and often an amount of injury that extends far beyond the current year; this is especially the case with Peaches and Nectarines. Even should the trees be strong and vigorous, if aphides be allowed to remain undisturbed for a week or two a considerable portion of the leaves get destroyed, the effects of which are the present season's fruit never attains its full size or quality; a weak second growth is made that has not a chance—particularly in districts where this fruit has only just enough time to ripen its wood—of ever getting the fruit-buds matured for another season. I merely instance the above as plants that are especially subject to aphides, and which in any locality rarely pass through a summer without being affected; but there are innumerable subjects in plant life that are scarcely less liable to their attacks. Later on in the season red spider and thrips are sure to make their appearance, and, if not dealt with promptly, will be equally destructive. In the majority of cases, amateurs' gardens are more or less confined, and thus favour the production of these insects to an extent that does not exist in larger gardens, which are more fully exposed to the influence of the winds. This particularly applies to aphides, which usually make their first appearance in the most sheltered spots. Where time is not an object, aphides, thrips, and red spider can be kept under by a diligent use of the syringe and garden engine, and in most cases, so far as out-door plants are concerned, after an application with any of the usual dressings in the spring for the first brood, it is sufficient afterwards to ply the syringe or engine with constant vigour. With plants under glass it is even more necessary to exercise continuous vigilance, for the conditions as to temperature and choice of food that favour the increase of insects are more or less always present throughout the year, and many of the plants are less able to withstand their attacks than those grown in the open air. For aphides and thrips the most usual remedy is fumigation, but Tobacco smoke always leaves a disagreeable smell for some days afterwards, and if the plant-house be in any way connected with the dwelling fumigation is still more objectionable. The necessity for smoking may often be dispensed with if a pailful of Tobacco-water be always in readiness, in which any affected plant may be dipped as soon as a trace of insects is discovered; the labour it entails is slight, and the application, if thorough, is generally more effectual than fumigation, as it destroys the eggs as well as the living insects; but whatever means are employed for their destruction, it is necessary that there should be unlimited watchfulness at all times. Of the different pests that harbour in the soil, and that prey upon cultivated plants, slugs are the worst; their ravages are most apparent in such springs as the present, when the weather has been so ungenial that vegetable life makes slow progress, and has not sufficient vigour to withstand the continual onslaught of these slippery marauders. In many places where they are numerous, and means have not been assiduously employed to annihilate them, the first crops of Peas, Lettuces, and Cauliflowers have been completely destroyed, whereas if Cabbage leaves, light boards, or anything of a similar nature had been employed, that would have attracted them either to feed upon or harbour under, and these daily examined, the crops would have escaped. All that is usually recommended as a preventive against slugs in the shape of ashes, lime, soot, chopped straw, chaff, or similar material, to impede their progress can be nothing more than a temporary measure that does not remove the cause of the evil, the only cure for which is reducing them to the lowest possible numbers. If once slugs be reduced to a small number, and the soil amongst the different growing crops be kept continually stirred—which is necessary both for their general well-being and the destruction of weeds—it will have the effect on the slugs of exposing them and their eggs to their natural enemies—the birds. Amateurs in their first attempts at gardening are apt to put too much reliance upon a particular soil or manure, or especial preparation before sowing or planting—all very necessary things; but the after preservation of the plants from the ravages of insects and other destroyers is equally important, and to effect this no half measures will suffice. In dealing with the various pests that affect the leaves of plants, a yearly recurrence of their appearance in greater or less numbers, according to the season, may be always looked for, and preparation should be made to give them a fitting reception; but with slugs it is different, for if these be once reduced to a minimum, there is comparatively little difficulty in keeping them under. Lime, above all other things, they cannot endure, and where at all troublesome the ground that has been occupied by any crop they feed upon should receive a good supply of it immediately on its removal. At the present time a dressing of this kind should be applied where late Broccoli, Winter Spinach, and Lettuce have stood; and as the refuse leaves and stalks are removed to the rubbish heap, lime ought to be strewn liberally over and amongst them, so as to kill any of the slugs that may be hidden. However numerous they may be, if this course be pursued, together with trapping them under Cabbage and Lettuce leaves, and a regular system of daily examination, few will remain by the end of the season.

Onions.—Choose showery weather for thinning Onions, but, should this not occur, give them a good watering some hours before so as to moisten the soil, or they will not draw freely. In thinning it is necessary to have regard to the different varieties grown; large-growing kinds of the White Spanish type require more room than smaller late-keeping sorts; they may be left respectively 6 in. and 4 in. apart in the rows. Where some are required for pickling it is well to leave sufficient breadth without thinning. In old gardens, especially where the soil is somewhat of a light nature, the maggot in some cases seriously injures the crop to such an extent that the whole is nearly destroyed. Through the maggot being found in the bulb an erroneous impression frequently exists that it enters from the soil, but such is not the case, as it is simply the larvæ of the Onion fly that lays its eggs between the leaf-blades, where they come to life and descend to the bulb. Soot is highly distasteful to insect life, and in this case, if the beds be dusted over moderately two or three times at intervals of ten or twelve days about the time the fly is depositing its eggs, the crop will often be saved. It is not either desirable or necessary to apply very much soot at each of these dressings, or it will do harm on account of its powerful stimulating properties.

Carrots and Parsnips.—Thin these out before the plants have become drawn, or they will be injured; the former need not at once be thinned to the full extent required, for if left somewhat closer than they ultimately should stand, every other may be drawn for use as soon as they attain the proper size. Parsnips should at once receive all the thinning they will need. Spinach ought to be thinned as soon as the plants are large enough to handle. This vegetable is often neglected by not receiving sufficient room, in which case the produce does not approach in quality to that which it attains when each plant is allowed to stand 6 in. or 8 in. apart in the rows; so treated, the leaves will be three times the size and substance of a crowded crop.

Conservatory.

The rapid growth that roof climbers are now making will necessitate a free use of the knife to keep them properly thinned that they may not become entangled, or sufficiently thick to unduly obstruct the light from the flowering plants beneath them. The choicest and best of these, among which are the hybrid Rhododendrons and Azaleas, will now be going out of bloom, and should at once be removed and placed where they can be continually well syringed and suitably treated to assist them in completing their growth. A genial heat, such as may be secured by closing the house early in the afternoon, immediately after the syringing has taken place, must be afforded them for the next month or six weeks, or until such time as the plants have made sufficient young wood and set their flower-buds. It often occurs, at this busy season, that Azaleas and other hard-wooded plants are left with their seed-pods on them till a more convenient opportunity occurs for picking them off, but it should be always remembered that seed-bearing has a most exhausting effect on all plants, and ought never to be allowed where it can possibly be avoided.

Cytisus and Coronillas, two of the most useful and effective early spring-flowering plants, should be pruned into shape, and have their branches thinned out where they have become thick and crowded; light and air will thus be admitted, which will enable the plants to break back and refurnish instead of having bare hollow middles, as is very generally the case if only the old-flowering growth be trimmed off. These, like most other plants, look best and are most useful when grown in the pyramidal form, and with a judicious use of the knife at this season they may easily be kept to that shape without the aid of sticks or training. To enable them to start freely, and make plenty of young wood, they should be placed where they can be treated much after the same manner requisite for Azaleas. Both Cytisus and Coronillas, after attaining age, and being cramped for root-room, often become infested with white scale, which is one of the most troublesome insects plant growers have to contend against. These fasten themselves on the bark of the stems and on the under sides of the leaves, from which their removal is a matter of some difficulty, and can only be accomplished by using extra strong doses of insecticide. After the pruning has taken place a favourable opportunity will be afforded for using either one or other of the many mixtures now sold for the purpose, as the plants will then be bare of young wood and leaves, which will allow of the insecticide being used of greater strength than would be safe at any other time. Whatever mixture is used it should be applied at a temperature ranging between 80° and 90°, when it will be found far more efficacious than if used in a cold state. Where there are many plants requiring attention in this way, the most economical and surest way of wetting every part of them is by dipping, so as to entirely immerse their heads; and if this cannot be done on account of their size, they should be thoroughly syringed after laying them on their sides, to prevent the liquid from soaking into the soil and injuring their roots. It will be necessary to turn the plants about and assail them from different positions to make sure of every insect, for partial applications are of little use, on account of the rapid way in which these pests spread. It will generally be seen, after a few days, whether the dressing has been effectual or otherwise; and if the insects show signs of life by adhering tightly to the plants, a second syringing should be given. Young plants of both the above can be grown to a useful size so quickly that it is scarcely worth keeping any after they attain age and get stunted, or are liable to insects difficult of removal, like scale. In order to induce Cytisus to flower well they must be grown freely in the early summer months, during which time they should receive a fair amount of pot-room. They should therefore be shifted on as soon as the young growth commences, using for the purpose good fibry loam, and a very little rotten manure that has been laid under cover for a time so as to be dry and sweet.

Camellias.—Continue to afford these every encouragement by closing the house early, maintaining, at the same time, plenty of atmospheric moisture by syringing the plants freely overhead, and well wetting the pathways, floors, &c. Camellias will bear much more heat at this time of year than they generally receive, and if blooms be required early they must be brought forward now, as the least artificial heat applied late in the autumn will cause them to cast their buds, or only to produce comparatively worthless flowers. Any that are limited as to pot-room must be kept well supplied with water if the plants be in a healthy state at the roots, and of this the top is a sure index. If with plenty of leafage of a dark green colour they will absorb a quantity of water for some time to come, and can scarcely have too much, provided the drainage be thoroughly efficient. Others that are making but an indifferent growth and show want of vigour and general activity clearly indicate that something is wrong at the roots, and they must be watered with great care, or the evil will be aggravated by causing others to perish. There is so much difference of opinion among growers as to the proper time of re-potting Camellias that it would appear of little importance whether carried out now they have made their growth or before they commenced to do so. Those who prefer to wait, or who had not the opportunity at an earlier date, should not defer the operation longer than it can possibly be avoided, for when the buds get large, any check in this way would be likely to throw them off.

Liliums.—Where these were potted as recommended—to leave a depth of several inches from the rim of the pot to admit of a surface dressing—it should now be applied; but before so doing, it will be advisable to get in what stakes are necessary to tie out the plants, as the positions of the bulbs can be more easily ascertained before the extra soil is added; and any injury that might result from the sticks coming in contact with them would thereby be avoided. Good, rough lumps of fibry loam or peat, or both combined, should be used for the top-dressing, in which the stems will root just at the crown of the bulb, and feed upon with great avidity. If the pots of these can be placed in some open position, secure from strong winds, they will make far better progress than if kept under glass, unless they should be required for early blooming, in which case a light airy place must be appropriated to them, or the under leaves will turn yellow and fall off. Should any be removed from the protection of glass to the open ground, they should receive a slight shade for a day or two, till they become inured to the change, or the sun will disfigure the leaves. The pots, too, ought to be sheltered by having some loose, littery material laid round them to prevent a too rapid desiccation of the roots, which, to such moisture-loving plants as free-growing Lilies, would prove highly injurious. Manure-water may now be applied to them occasionally with great advantage, and more frequently as they advance in growth and fill their pots with roots. Any that are standing in pits should have the sashes removed by day, and be kept well apart to admit a full play of light between them, that the stems may be sturdy and strong and the leaves healthy.

Cyclamens.—The starving of these that used to be practised by drying them off during the summer months has of late years been discontinued, and a more liberal and rational treatment is now pursued, the result of which is most satisfactory, as may be evidenced by the splendid specimens that many growers exhibit at the metropolitan shows. These are grown freely and continuously on without rest or check of any kind from the time they make their appearance above the soil in the seedling state till they attain sufficient size to carry at least 100 blooms, and this in a little more than a year from the time of sowing the seed. If grown on again after they have done flowering, the bulbs increase in strength for several years and make a fine display, although the individual blooms may not be so large as those on younger plants. For the last two or three seasons we have planted the whole of our stock out in prepared beds in partially shaded borders; and it is a practice I can strongly recommend, not only for the saving of time and labour in attending to them, but also for the increased state of health and vigour of the plants when taken up in the autumn compared with others treated in pots during the summer months. The bed or border for planting them in should be so situated as only to get a few hours' sun either in the forenoon or evening, and in such a position that they can be easily attended to for watering or syringing, the latter of which they require almost daily to preserve the leaves fresh and free from red spider. In preparing the bed, the natural soil should be dug out to a depth of 6 in. or 8 in., and be replaced with rough fibry peat pressed firmly in, or failing that, leaf-soil and loam may be substituted in the proportion of three parts of the former to one of the latter. The plants should then be turned out of their pots without disturbing the roots, and planted sufficiently far apart for the leaves of each to stand clear, after which give a good watering and frequently syringe or damp overhead whenever the weather is dry and warm. Those who prefer keeping them in pots should now place the plants in pits or frames in a genial atmosphere, to promote which the syringe should be applied, shutting up in the evening afterwards.

Cinerarias.—Any choice kinds of these now going out of bloom, and which it may be desired to perpetuate, should have the flower-stems cut away and be then planted out in a north or shady border to form suckers. To enable them to secure these, they must receive plenty of water, and be kept clear of green fly, or the plants will die outright, as they possess little vitality after the exhaustive effects of flowering. Seedlings of these are much more vigorous, and make better plants for decorative purposes than any that can be grown by the above method, and, except for special purposes, such as for exhibitions, &c., the latter are preferable. A sowing should now be made to flower late next season, and those now intended for Christmas should be carefully attended to, in order to push them forward and get them sufficiently strong. No place suits Cinerarias during the summer months better than a common garden frame in some light shady position, and the natural soil, with just sufficient ashes over it to keep out worms. When they have to be shaded by the aid of mats or other appliances—it is very rare they are on at the right time—and the effect of strong sunlight is anything but favourable to the growth or well-being of either these or Primulas at this season of the year, so that the remarks made with reference to the former apply with equal force to the latter. A moist atmosphere must be maintained by damping the floor of the pit or frames on which the plants stand, and syringing them overhead just before closing.—J. Sheppard, *Woolverstone Park.*

Orchids.

Every possible means should be resorted to in order to keep the temperature of the cool Odontoglossum-house down, for if it be allowed to get too high the plants will not thrive. The fire-heat in connection with this house should be turned off altogether, as henceforth it will do more harm than good. The house should be carefully shaded on sunny days, and air freely admitted at all times, leaving some on all night; it is best to have the bottom ventilators covered with coarse gauze or perforated zinc, so as to keep the insects from getting in and damaging the plants. The cool Odontoglossums, Masdevallias, and similar plants should be liberally supplied with water, going over them at six o'clock in the morning, or as soon after that hour as possible, and watering those which require it with a spouted pot; any water accidentally dropped into the young growths will then be dried up before the heat of the day has set in; water should be thrown about the house several times a day, in order to keep up a moist atmosphere, but the plants should not be syringed; if the air, shade, and temperature of the house be attended to, the syringe will not be necessary, and if it be not carefully used it often does mischief when brought into use: in the case of any class of Orchids it should only be employed early in the morning and never during the heat of the day. The cool Odontoglossum-house should be a lean-to with a north aspect, but if it face a few points east or west, it is of no importance. Ventilation should be so arranged that the air may circulate freely around and under the plants. Underneath the stage or some other convenient part of the house should be cemented so as to hold an inch or two of water; if the stage on which the plants are placed be a slate one, it should be cemented round the edges and along the joints so as to make it hold water, and light wooden lattice-work from 2 in. to a foot in height should be placed over it for the plants to stand on; or, instead of this, they may be set on inverted flower-pots. Corrugated iron trays may be placed on an ordinary wooden stage and kept full of water without fear of rotting it; it is absolutely necessary that a surface of water of some extent should be present in the cool Odontoglossum-house during the summer time. Attend to giving air, shade, and moisture in the other houses, and regulate the temperature as recommended last week.—JAMES O'BRIEN.

Hardy Fruits.

At this season, when all kinds of hardy fruits are growing in the most luxuriant manner, it is well to bear in mind that next year's crop depends, in no small degree, on the treatment that the trees receive this year; therefore they must be kept clean and healthy to bring about successful results. One of the most important operations connected with fruit culture now demands attention, viz., the pinching, stopping, and regulating of shoots. Summer pinching of the new growth, to induce fruitfulness, is much preferable to winter pruning, for nearly all kinds of fruit; and, if done properly and at the right time, the best results may be anticipated. Frequently, for the sake of appearance, the shoots are pinched in too closely, and growth thereby is too much repressed; sometimes they are allowed to run wild, and then removed wholesale—a proceeding which is ruinous to the commonest fruit: extremes either way should be avoided. Apples, Pears, Plums, some kinds of Apricots, and all kinds of Cherries, except Morellos, bear their fruit on side-shoots or projecting spurs, and therefore the new growths of these, as a rule, should be stopped at the fourth or fifth leaf; if pinched in closer than this, the buds "close home" break into new growth in lieu of forming fruit-buds, which is the object desired. Let it be granted, that by leaving them there the spurs in time become long and far removed from the wall, then, to a certain extent, the wall becomes useless as a protector; but it is an easy matter to remove annually at the winter dressing a few of the longest spurs, and so by degrees renew those on the entire tree. Of course, when stopping has been once done at the distance named, any supplementary growths of this season may be stopped at the first joint, and repeated as often as growth makes the operation necessary. If, as sometimes happens, new growths have been left too long without having been removed or stopped, do not remove them all at once, as that would give the trees a severe check; but take off a few shoots at intervals of three days till all be removed. It is always advisable, however, to obviate this by stopping as growth progresses. Peaches and Nectarines that were not sufficiently disbudded should have their new growth pinched in rather closely, this, in their case, being preferable to disbudding at this late period. If not already done, the fruit should be thinned at once, and the same remark applies to other kinds of fruit that have set thickly, particularly to Pears. Water Strawberries in the absence of rain, as they soon suffer if they lack moisture at their present stage.—W. WILDSMITH, *Heckfield.*

DR. SCHWEINFURTH's recent journey through the desert from the Nile to the Red Sea has resulted in the addition of many unexpected plants to the Egyptian desert flora. Dr. Ascherson has also been able to extend Professor Jordan's sketch survey of the Little Oasis, made in 1874, very materially; and owing to the friendly reception given him by the inhabitants, has gathered many details of interest respecting their domestic life. He reports a custom here which is quite unknown in other parts of the Nile valley, namely, that of fire-making by rubbing together two dry pieces of the midrib of the Date Palm leaf.

PLATE XXIV.

HARDY MAGNOLIAS.

(WITH A COLOURED FIGURE OF MAGNOLIA LENNEI.)

THE Magnolias, of which a full account was given in Vol. VIII. (see p. 269), constitute a genus of highly ornamental small trees, with large entire leaves and terminal solitary Tulip-shaped white or purple flowers, which are either agreeably fragrant, or, on the contrary, have a disagreeable odour. All the kinds, which are perfectly hardy, come from North America, and, with the exception of the beautiful evergreen, M. grandiflora, which is not quite hardy, they are all deciduous. M. grandiflora, which is more or less tender in our climate, and of which there are several varieties, requires the protection of a conservative wall. It has large white flowers, which are very fragrant, and are produced throughout the summer and autumn. M. macrophylla is unquestionably the finest of all the species, on account of the large size both of its leaves and flowers; the latter, which open during June and July, measure from 8 to 10 in. in diameter; they are of a white colour stained at the base of the petals with purple, and sweet-scented. This kind often thrives badly in England, but where that is the case it will generally be found that it is planted in dry situations, and that, consequently, it suffers from drought in summer. M. auriculata has large leaves, mostly in tufts, at the ends of the branches, and rather large greenish-white flowers, which have a disagreeable odour. Its blossoms open in April and May. M. pyramidata has shorter leaves than M. auriculata, of which it is evidently only a variety, and quite pyramidal in outline. M. cordata has broadly ovate leaves, tomentose on the under sides and quite smooth above; its flowers, which are yellow, are produced in June and July. M. acuminata (the Cucumber tree of the Americans) has oval, acuminate leaves 6 in. or 7 in. long, and 3 in. or 4 in. broad, pubescent on the under surface. Its flowers, which are produced from May to July, are yellowish-white and slightly fragrant. It is a very robust and free-growing kind. M. tripetala (the Umbrella Magnolia) has leaves from 18 in. to 20 in. long, and 7 in. or 8 in. broad, lanceolate, the adult ones being smooth, and the young ones pubescent underneath. Its flowers, which are large (7 in. or 8 in. in diameter), have large, flaccid petals of a greenish-white colour, and are produced from May to July at the extremities of the last year's growth. They have a sweet but heavy scent. M. glauca (the Beaver tree) has elliptic, obtuse leaves, the under surfaces of which are glaucous. Its flowers, which are produced from June to September, are white, 2 in. or 3 in. broad, and very fragrant. There are three or four varieties of this, one with nearly evergreen leaves, and another with long narrow leaves. M. Thomsoniana is another tolerably distinct variety with rather larger leaves. M. conspicua, sometimes called M. Yulan, is a showy kind, distinguished by its flowers appearing before the foliage. It has obovate, abruptly-acuminated leaves, which, when young, are pubescent, and expand after the flowers have faded. It is a remarkably showy plant when covered in spring with its white, Tulip-shaped, sweet-scented flowers; there are numerous hybrid varieties of it now in cultivation, all more or less tinted with purple, similar to the hybrid M. Soulangeana. M. conspicua is quite hardy, but it produces its flowers so very early that when in blossom it requires protection. M. purpurea, sometimes called discolor, has obovate, acute, reticulately-veined leaves, of a deep, glossy green colour. Its flowers, which are produced from March to May, are purple outside and white within. This kind is quite hardy, and forms a bush from 3 ft. to 4 ft. high. M. gracilis, or Kobus, a less hardy kind than some of the others, differs from purpurea in having paler green and narrower leaves, and in the flowers being longer and more slender in form, the points of the petals, which are dark purple on the outside, are slightly turned inwards. M. Lennei, originated some years ago in Italy, is said to be a natural hybrid between Yulan and gracilis, and has, as will be seen by our plate, the more highly-coloured flowers of obovata, but it is difficult to distinguish among the many varieties now cultivated in different gardens. M. Campbelli is a new introduction from the Himalayan Mountains, with magnificent foliage and red flowers. Its hardiness has not yet been sufficiently tested, but it is expected that it will live out-of-doors, at least, in the south of England. G. GORDON.

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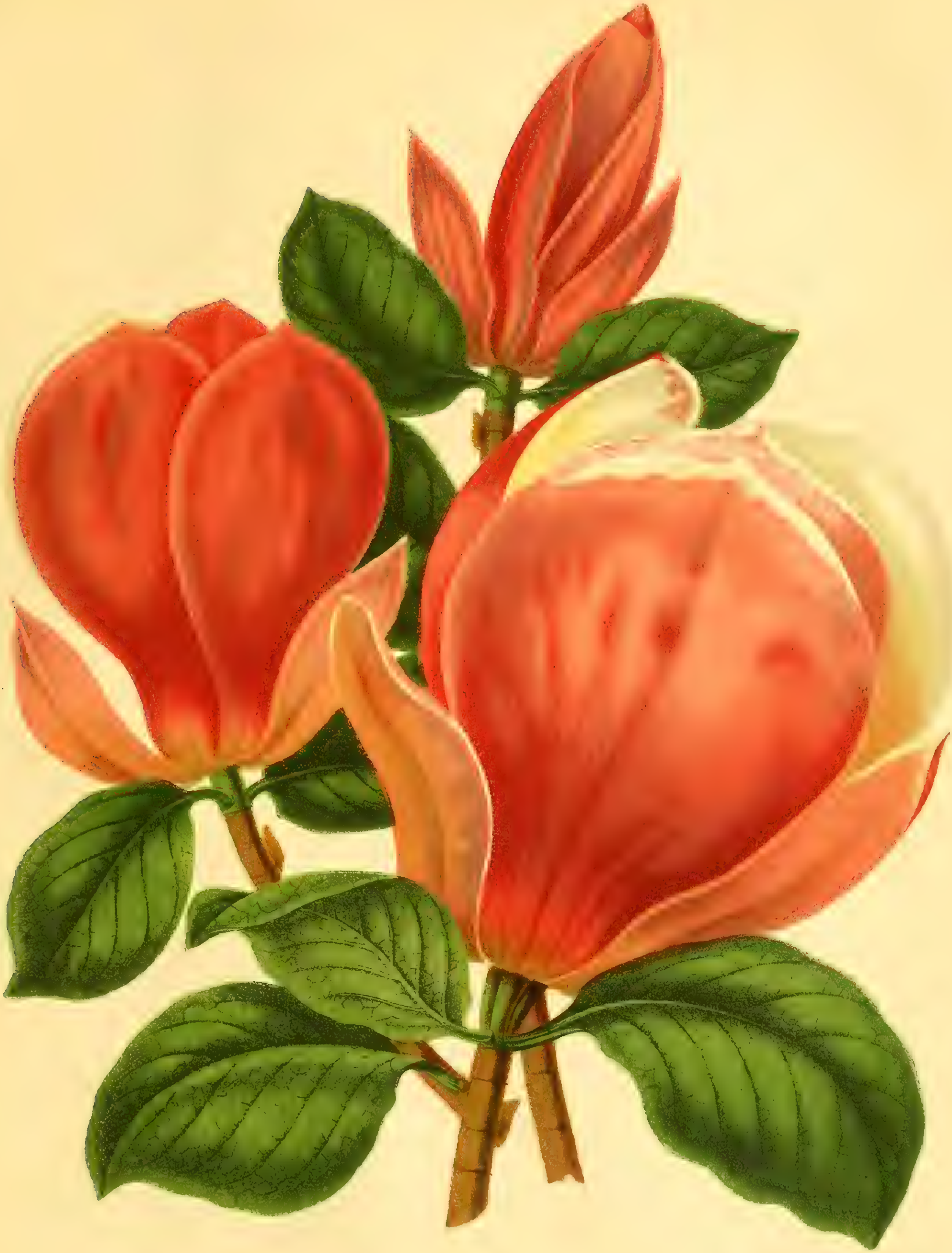


MAGNOLIA LENNÉI

LIQUID MANURE IN GARDENS.

One of the common mistakes made by amateur cultivators of flowers is that of over-manuring. To grow plants properly, little or no crude manure should be incorporated in the soil, as it induces a too luxuriant growth of foliage and wood at the expense of the flowers. The liquid form is the best in which to apply manure, and this should be made very weak, especially if it be of a stimulating character, such as guano. The chief value of liquid manure is that its effects are perfectly controllable, and can be made constant, either to produce an exuberant growth and sustain it, or to produce any lesser effect, as may be desired. If wood and foliage be desired, the manure should be given as soon as the buds begin to swell in the spring, or when the leaves commence to develop. This growth can be kept up during the season by frequent applications of the liquid, but should never be continued beyond the first of August, as then the growth naturally begins to cease, the wood begins to harden as the season advances, and ripens for the winter rest of the plant. If the liquid be applied after the commencement of this preparation for rest, the growth is unnaturally continued, and the wood, not having time to ripen, is winter-killed. When the production of fine flowers is desired, liquid manure should be applied when the flower-buds begin to show themselves prominently and commence to swell; it then causes a larger development of the petals and an enhancement of the colours; but if applied too early, it is liable to produce monstrous flowers. Thus applied to Strawberries, for instance, it causes larger and more evenly-developed fruit to be produced. Applied to Roses, the flowers are largely increased in size and also in brilliancy of colour. For Zonal Geraniums and similar plants bedded out, the supply must be moderate and continuous; while to plants bedded out for their peculiar foliage it should be given more frequently, so as to cause the production of larger and higher-coloured foliage. With some plants, however, such as bulbs (Hyacinths, Tulips, &c.), the strength of the flowers is dependent upon the luxuriance of the leaf growth of the previous season, the results of their vital action being stored up in the bulb for next year's blooming. In such cases the plants should have a supply of the liquid for some time after they have done blooming. When applied to fruit trees, the best time for its application is after the fruit has set and it begins to swell. To give it when the flower-buds show themselves is useless, as the size and colour of the flower have little if any influence upon the size and flavour of the fruit. If the manure applied be too strong, a too luxuriant leaf growth is brought about, and there is danger of the tree casting its fruit prematurely, the whole energies of the plant under the stimulating action of the manure being expended in the production of leaves. As the season for the maturing of the fruit approaches, the supply of manure should be gradually withheld, as otherwise the fruit, although large and fair, would become watery and lose much of its proper flavour. The best mode of applying liquid manure to plants or trees in the open ground is to make holes near them, or toward the extremities of the circle to which their roots extend, with a crow-bar or stout stake, from 1 to 3 in. in diameter, driven in to a depth of from 12 to 18 in., and then withdrawn, filling the holes with liquid. It thus soaks away into the soil immediately in contact with the roots, and nothing is lost by evaporation, as is the case when it is applied to the surface of the soil. This is also an admirable mode of watering plants in the open ground during a drought. The number of these holes should vary with the size of the tree or plant, one hole to every 2 ft. square of ground being generally sufficient. If the weather be very dry, the manure should be much diluted; and if the weather be wet, it may be applied of greater strength. As a rule for the preparation of liquid manures for out-door purposes as above recommended, the following quantities of various manures to a hogshead of water (sixty gallons) will give the average strength at which it should be used, if applied every two weeks during the season:—One bushel of horse manure, or the same quantity of sheep manure, or half a bushel of hen manure, or half a bushel of soot, or six pounds of guano, allowing the liquid to stand two or three days before using, stirring it once a day, and using the clear liquor. R.

Cold in its Relation to Height.—According to some remarks of M. Martins, of Montpellier, cited in the "Belgique Horticole," the intensity of cold at night diminishes up to a certain height. This phenomenon was tested by M. Martins by placing thermometers in the Botanic Garden, and at various heights on the cathedral tower. In clear nights the increased warmth at a higher elevation is the most perceptible; in dull nights there is little or no difference. The reason of the greater injury inflicted on the lower branches of shrubs, &c., is thus accounted for.

Lighting of Exhibition Tents.—In "Le Nord-Est," published at Troyes by M. C. Baltet, M. Raoul recommends horticulturists to partially coat over the tents in which they exhibit their flowers with boiled Linseed oil. Thus treated the material of which the tent consists becomes more permeable to light, and the plants are shown off to greater advantage. We fancy, however, that the effect of plants under canvas is all the finer by reason of the subdued light.

THE FRUIT GARDEN.

LARGE VINES BEST.

I have given this subject much consideration, and have come to the conclusion, from my own experience, and from that of others who have had to do with Vines on the extension system, that for the main crop of Grapes, where little or no forcing is required, large Vines are certainly better than the old single rod and spur system. Vines would do better, and last longer in a fruitful state, if allowed to fully develop themselves. Many have seen or heard of the Hampton Court Vine, and of the enormous crops which it has borne for a great number of years. It is about eleven years since I saw it, and it was then carrying a heavy crop of bunches about half swelled, and to all appearance, judging from the foliage, it would finish them well. There are several places in the country where there are large Vines as well as the one just mentioned. These have for the most part been little heard of beyond the neighbourhood where they are growing. Some of the finest Vines I have ever seen in different parts of the country were those that were planted outside and brought through the front wall into the house, and allowed to grow and fill it.

The large Vine at Hensol Castle, in Glamorganshire, was a cutting from the Hampton Court Vine, and was planted by the late Mr. Crawshaw some seventy years ago in a prepared border outside, and introduced into the house through a hole in the front wall at the centre of the house. The stem of this grand old Vine, before entering the house, is nearly a foot in diameter. As soon as it enters it branches off horizontally right and left in two leading shoots, which have grown to each end of the house. These shoots are trained close to the wall-plate of the front lights, and are supported by blocks of wood, about 6 in. long, placed below them to keep them off the sill of the front wall. From the two leading shoots twenty-one rods are trained up the rafters at regular distances to the top, and they fill the house completely. The border is 72 ft. in length and 45 ft. in breadth, with a good fall to the south. The Vinery is 72½ ft. by 17 ft. wide, and the whole ground surface inside is covered with flagstones, which slope from the 3 ft. walk at the back of the house to the front wall, say 2½ ft. of a fall. Of the general treatment of this Vine I can say but little; but Mr. Francis is entitled to great credit for the promising state it was in when I saw it the other day. Mr. Francis is, I may add, a staunch supporter of the extension system. This Vine produces heavy crops of well-finished Grapes, which are generally ripe some time in August, but their maturity depends a great deal on the season, as no fire-heat is used at any time during its growth. The berries, as a rule, are large and well coloured. Of the bunches, which average from 1½ lb. to 3 lb. each, Mr. Francis cut last year 900 from it. The Grapes are not subject to shanking unless when the crop is too heavy. It is a fact well known to most cultivators that heavy cropping is one of the principal causes of shanking. This Vine, too, is seldom attacked with red spider. As the house is not heated the Grapes do not keep long; on the contrary, if they are not all cut before the middle of November they begin to damp off very much, and in a short time become useless, but with a little fire-heat to expel damp they would keep much longer. I was pleased to see that Mr. Francis was bringing up some young rods from the bottom of the main shoots to take the place of some of the older ones. I would strongly advocate the system of never allowing the rods to get very old, as it becomes difficult to get the old wood to break if left to go too long.

There is another good Black Hamburgh growing at St. Fagons Castle, near Cardiff, though not by any means so old as the Hensol Castle Vine. It fills a house 30 ft. long by some 14 or 15 ft. wide, and is at present in excellent health. When I saw it the other day the young shoots were from 8 in. to 9 in. long, showing strong bunches, which I have no doubt will turn out well. Mr. Crossling informs me that in 1873 he found the Vine in a weak state, with a couple of canes of from eight to ten years' growth. In the following spring it broke weakly, and did not show as much as a bunch of fruit. All the shoots from the main stem were trained to their full length and ripened well. Two of these were trained horizontally, right and left along the front of the house in a line with the bottom of the rafters; when pruned in the autumn, they were left 13 ft. long each from the main stem, reaching within 2 ft. of either end of the house. All the others were removed, but he still retained the old canes, which again broke weakly in 1875, while the young canes broke well. From the young canes just mentioned twelve rods were allowed to grow, at equal distances apart, to the top of the house, and they have entirely filled it, and each was allowed to carry a bunch of Grapes, which weighed from 3 lb. to 4 lb. The whole portion of the Vine was cut out, and the young rods look all that could be desired. Mr. Crossling says he is never troubled with red spider in this house; the floor is all covered with flagstones, and a few large Orange and Myrtle trees are wintered under the Vine, besides a few other plants. He can say little about the border or its formation. By mulching it with manure from the farmyard, he has induced the roots to come within 6 in. of the surface.

The two Black Hamburghs at Dumfries House, in Ayrshire, are reputed to be from 140 to 160 years old, and finer Vines and better bearers could not be desired than they are, even at this day. The Vinery is an old-fashioned structure 60 ft. in length and some 9 ft. or 10 ft. wide, the roof is at an angle of 45°, and it is heated by means of an old-fashioned flue. The two Vines fill the house, and would have filled a house long ago twice its size. The treatment which the Vines received during the six years they were under my charge was very simple. They started into growth of their own accord about the middle of February. The house was kept close, and the Vines syringed twice a day till the buds burst into leaf. After that they were given air as required, but were never syringed afterwards. The passage and surface of the floor were damped down several times daily, and were never allowed to get dry at any time. As the season advanced, and the house got filled with leaves, it was damped down, after being shut up in the afternoon, with a little liquid from the cow-house diluted in water. Care was taken, however, not to have it too strong, in case the ammonia which it contained might injure the foliage. These old Vines, spreading out in luxuriant health, extending from one end of the house to the other, carried splendid crops of fine Grapes. The bunches would run from 1½ lb. to 3½ lb. The berries were large, well "hammered," and as black as Sloes. The leaves were strong, healthy, and green, till the last bunch of fruit was cut. They ripened off a beautiful golden-yellow, and were allowed to fall as they ripened of their own accord. As soon as their leaves were off the Vines were pruned. I tried to have the young and old wood as equally divided over the house as possible; and by allowing a few leading shoots to start from the bottom every year, and cut back to a proper distance, I had rods on the Vines at all stages from one to five years old. By adopting this plan, the rods from the main stems were not allowed to be more than five years old. The rod reached the top of the house in four years, and fruited the fifth, and was then cut down close to the main stem, where another cane had been started to take its place. I never saw a red spider in the house. The late Mr. David Murdoch, who knew the Vines for fifty years, and who for twenty years of that time had charge of them himself, told me that he never saw a red spider in the house, and that they had always borne heavy crops of fruit ever since he knew them. The glass is old, in small squares, and very open at the over-lap, which admits a great deal of air over the whole surface of the roof. This, I have often thought, added texture and strength to the foliage. The Vines are planted outside and brought through the front wall. There has been nothing done to the border for years, farther than covering it up with stable litter in the autumn, and emptying the tank from the cow-house on it all through the winter. The border and adjacent ground has a good fall to the south. The River Lugar runs close by the gardens at a distance of about 100 yards from the Vinery, but I don't think the Vine roots go near it. I may add that I am filling two Vineries here with one Vine each, on the same principle as that just described at Dumfries House. The variety is the Black Hamburgh.—A. Pettigrew, in "The Gardener."

THE FOUR SEASONS STRAWBERRY FROM SEED.

In a letter from M. Fallot, Chief Gardener at the Chateau de Maintenon, published in the "Bulletin de la Société d'Horticulture d'Eure et Loire," the writer strongly urges on Strawberry growers the advisability of cultivating this variety from seed rather than from runners or cuttings, wherever it may be practicable. There is a wide difference between beds of plants grown on the two systems. The robust habit of the seedlings, their greater productiveness, and the superior beauty and size of the fruit, give them almost the appearance of being different varieties of the same plant. M. Fallot has largely experimented on the three usual methods of propagation by division, by runners, and by seeds, with the result that estimates their merits as being in the inverse direction of the order in which they are named, that is to say, the roots are inferior to runners, and both inferior to seedlings. The comparative ease, however, with which a large plantation may be made from cuttings or runners has great temptations for the cultivator, whose time is taken up with a thousand other cares. Last year being a damp one, M. Fallot's crop was most successful, the fruits being so large and fine that when brought to table they were thought to be a new variety. The following is his method of culture:—About the middle of June the best fruit on the finest plants are chosen for seed. They are dried in the sun, and the seeds are washed out, rejecting those which remain floating on the surface. They are sown in the beginning of July in a light soil, raked over and covered with straw; they are shaded until germination has taken place, when more light is admitted gradually day by day. The sowing may be made in pans, which may be exposed to the sun or placed in the shade, as may be thought desirable; they should be watered daily. During the last week in August they are pricked out, leaving about 4 in. between each plant, and in March following they are planted out 12 in. or 15 in. apart, advantage being taken of the first fine days for the operation. All runners are diligently nipped off during the whole year, and also flower-buds until the middle of June. From the end of July the plants are in full bearing until the first frosts set in. The third year they are cleared of all their dead leaves, in March all runners being vigorously destroyed. Towards the middle of May straw is placed between the rows. The second crop is found to be much more abundant than the first, and to last from the 20th of May until the frosts set in, the plants growing much more rapidly and vigorously than if they had been raised from cuttings or runners. From about the middle of June the plants are well watered every day at the rate of a gallon of water to every ten plants. After the second crop the plants are pulled up and destroyed, the order of operations being—first year, sowing; second year, first crop from the end of July only; third year, a full and abundant crop from May 20 until the first frosts set in. The seedling Four Seasons Strawberry being more vigorous in its growth than the others, continues bearing to a later period, but it is not adapted for forcing, the plants produced from division or runners being preferable for this purpose. It is hardly necessary to remind growers that this variety is the only one that can be reproduced from seed; the English and American sorts not only do not yield the variety to which they belong, but produce a mixture of as many kinds as there are plants. They must, therefore, necessarily be propagated by means of runners.

The Grape Market.—Fruiterers' profits on really fine Grapes are something enormous. According to "The Gardener" Grapes are often bought at Christmas time for 7s. 6d. per lb., and retailed at 21s.—a respectable profit, certainly, but such as debarred all but the most wealthy class from purchasing. No doubt, the price to the producer was remunerative enough, but we fear this is an instance among many of the fact, that notwithstanding the great extension of Grape-culture and the comparatively low price at which the grower can, with the aid of cheap glass and improved appliances of every kind, afford to sell Grapes, the consumer does not yet share the benefit therefrom to the extent that should be expected—a benefit which, could it be realised, would add an impetus to Grape-culture in this country to which it would be difficult to conceive a limit. Of course, it may be said that a pound of Grapes is just worth what it will bring in the market; but the British public will never reap the full benefit of the fact that first-rate Grapes can be produced for at least nine months of the year, with a respectable profit to the grower, at 4s. per lb., till the retailers are content with 50 per cent. profit; and then the demand for Grapes would soon increase fourfold; in the long run, the extent of the trade of the retailer would make up for more moderate profits: the public would get Grapes cheaper, and the field and call for British-grown Grapes would make Grape-culture more available than it is as a means of livelihood.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Vine v. Smoke.—In a paper addressed to the French Academy of Sciences, M. C. Husson calls attention to the disastrous effects of smoke on vegetation. For many years proprietors of vineyards situated in the vicinity of lime-kilns have been complaining of the damage done to them by these inconvenient neighbours, and various chemists have confirmed their statements.

Russian Apples and Cold.—Russian varieties have gone through from 38° to 44° of cold, Duchesse of Oldenburg lives at 44°, dead at 46°; Alexander, 40°, dead at 44°; Red Astrachan, 33°, dead at 44° below zero. Tetofski is the only variety of the Apple that lives at 53° below zero, while some of the Siberians have been killed with 50° below zero.

Saving a Crop of Grapes.—Mr. A. Crambe tells us in "The Gardener" how he saved a crop of Grapes endangered through the bursting of a boiler in January when they were coming into flower. "I had about thirty common water-pots introduced twice a day, filled with boiling water, which enabled me during daylight to keep up a heat of from 50° to 55°; and occasionally, when favoured with a little sunshine, the thermometer rose to 70°, which caused me to ventilate slightly. By the means described, I have been able to save my crop; and more, the weight and quality are equal to those of any preceding year."

Hardy Peaches.—In the report of the Orchard committee of the Michigan Pomological Society for 1875, mention is made of hardy varieties of Peaches as examined in the orchard of Mr. C. T. Bryant. Hill's Chili is reported to be the hardiest in wood and bud. Keyport White and Red Rareripe come next; and these are followed in order by Early Barnard, Jaques Rareripe, and Early Crawford. Hale's Early compares with the Early Crawford as to bud, but in wood has proved tender.

THE KITCHEN GARDEN.

MUSHROOM CULTURE IN CELLARS.

Mushrooms may be, and often are, grown to perfection in many less ambitious structures than the Mushroom-house properly so called. Any kind of outhouse, in fact, will answer for the growth of autumn and early winter Mushrooms. One of the best crops which I have ever seen was grown in a cellar at West Hill House, Highgate. Of the appearance of the beds in this instance some idea may be formed when I state that from one 12 ft. long and 8 ft. wide were gathered as many as 160 lbs. of Mushrooms between October and February. Other beds were also equally productive, though all of them were without the means of being warmed artificially. They merely occupied a dry dark cellar under the dwelling-house, where no hot-water pipes or other mode of heating was employed. Yet, with the thermometer down as low as 40° they remained unharmed. The usual temperature, however, ranged from 48° to 55°. The beds were formed of short manure from the stables, 16 in. or so in depth. Previous to using the manure it was thrown into a heap to heat and get rid of its superfluous steam and moisture; it was then spread out for a day or two to dry and cool; after that it was thrown together again for a few days more, and then it was made up into a bed. In forming the latter, however, care was taken to have it made very firm by means of treading or beating, and as soon as the heat had risen to the proper point it was spawned with Milltrack spawn, of which half-a-bushel is sufficient for a bed 10 ft. square. This, broken into pieces about the size of small Apples, will, placed just in the manure, and firmly covered 2 in. deep with any good garden soil, produce Mushrooms of first-rate quality in six weeks in a temperature of 50°. Beds thus treated never fail to bear satisfactorily, not only in regard to quantity but size, many of the specimens weighing 4 ozs. each, and excellent in flavour. It will thus be seen that this plan of growing Mushrooms in cellars is worthy of imitation; especially in places—and there are many—where there is no proper Mushroom-house, and even where there is, empty cellars might thus be turned to profitable account. J. M.

Mushrooms from Milltrack spawn.

OBSERVATIONS ON THE PLAN AND MANAGEMENT OF THE KITCHEN GARDEN.

It would be a difficult task to say why the culture of the kitchen garden should be the last of which cultivators as a rule get a thorough knowledge, seeing that it is the most generally useful of all, for a kitchen garden is indispensable wherever a gardener is kept, whereas other branches embracing luxuries such as forcing and flower gardening in their many and various forms, are indulged in according to the taste and means of the owner, and vary in their requirements in almost every establishment. I believe that the exaggerated notions of the great skill required to grow exotic fruits and flowers under glass has had a most depressing influence on the cultivation of kitchen garden crops and hardy plants generally, while the favour that exotics received at horticultural exhibitions was, up to the last few years, more likely to discourage still further the cultivation of kitchen crops, and was the means of impressing young gardeners with the idea that vegetable and hardy fruit culture was only fit for cottagers or amateur cultivators. In many gardens the ornamental or show portions of the grounds have so overgrown the amount of labour at disposal, that the useful but less conspicuous portions are robbed of the necessary attention. If the kitchen garden crops require screens to hide them, the fault must lie at the door of the cultivator, and not in the crops themselves, for I am not acquainted with anything that yields more lasting pleasure to a gardener than a well-ordered kitchen garden. There are at all seasons some objects of interest in crops at various stages of growth that it would be difficult to say which is the most interesting season, for he who is to achieve satisfactory results must look far ahead and provide against the influence of adverse seasons, the effects of which will well-nigh baffle the most experienced cultivators, even when well acquainted with the best varieties, seasons for sowing, and the most favourable soils and positions for the site of the kitchen garden.

In pointing out a few simple rules that tend to make the kitchen garden of equal interest with other portions of the garden, I would remark that it is on the small matters connected therewith that success or failure rests.

In laying out kitchen gardens we must set our minds entirely on the object we desire to be attained, viz., that its usefulness will be measured by results; and, whatever our notions on straight lines in pleasure grounds may be, there can be no question of their thorough adaptation for the end in view, therefore boundary and intersecting walls and walks should be perfectly straight and parallel with each other. I may here observe that upon the walks and edgings associated with the walls will depend greatly the aspect of the whole garden. Good walks are indispensable, not only for comfort in walking, but should be capable of bearing the carting and wheeling necessary to every portion. The outer or boundary walk, at least in large gardens, should be wide enough for carting manure and other materials expeditiously to all parts; they must be well drained, and present a firm, moderately rounded surface, and kept at all times scrupulously clean from weeds and litter of every kind. By choosing dry periods for the operation of carting much unnecessary labour is saved, as the surface of the walk should be broken up as little as possible under any circumstances.

As an edging I find nothing to equal Box, when kept in good condition, but it must not only be well laid at first, but carefully attended to afterwards; it should be clipped in May, or early in June, with very sharp shears by experienced workmen, and should form an unbroken line of exactly the same proportions throughout its entire length. It is not in their use, but in their abuse, that Box edgings have lapsed into their present state of disrepute. When wheeling through them, and trampling on them, is practised, gaps and patches are formed which destroy all pretensions to beauty; to obviate this defect portable bridges for wheeling over, and stout stakes driven firmly in to protect the corners, preserve the edgings intact for an indefinite period.

The walls are conspicuous objects, and upon the thoroughly furnished aspect which they present at all seasons, will depend a great feature of the garden. I do not recommend the exclusive planting of special varieties on most favoured aspects, for I believe that better results in the way of succession for a long period, are achieved by adopting some portions of each kind on distinct aspects, but they should be grouped for the more ready manner in which they are protected from frosts, birds, and other enemies. Fruit tree borders at the bases of walls should not be less than 10 ft. or 12 ft. wide to allow of a 3 ft. alley being kept clear for attending to the trees, and as an undisturbed root-run: this should be always mulched during the summer. Borders with south aspects are invaluable for the earliest and latest crops of vegetables, and cool, shady borders for those in the mid-season.

The main quarters should be kept perfectly clear of trees, and deeply cultivated for general crops, or a single row of espaliers or cordons may divide a narrow border from the walks, as they form most useful auxiliaries to the fruit supply. Pyramids and low bush trees form good central or divisional objects, but standards should be grown either in the orchard or in spaces specially devoted to fruit culture, where the main portion of bush and fruits may be also grown, as a mixed system is not by any means so satisfactory to either fruit or vegetables as when they can each receive treatment congenial to their several wants. Strawberries form a good rotation crop on ordinary vegetable quarters, and, if not left in one position more than three years, the land is decidedly benefited by such change.

In planning the rotation of crops it is well to bear in mind that crops of an opposite character generally succeed best, but, by the aid of deep cultivation and liberal manuring, market growers fill whatever ground is vacant at the time with those crops that are most in request, whereas private growers, with whom quality of crop stands before quantity, can arrange a pretty correct plan of cropping before the winter cultivation. Root crops such as Salsafy, Scorzonera, Parsnips, &c., are decidedly preferable grown in deeply cultivated land, without any addition of fresh manure. A routine, such as the following, answers well:—First year, Onions, the ground afterwards manured and deeply dug, and planted with Cabbage in autumn; second year, Sprouts; third year, ground cleared of stumps and weeds, and prepared for celery trenches, after which Peas, Potatoes, Strawberries, &c., succeed well; but one rule should be followed with all, viz., to drill all seeds and to plant all plants in straight lines of equal distance apart each way, not only for the sake of appearance, but for the expeditious manner in which the operation of cleaning the crop may be performed, compared with broadcast sowing: immediately the lines of seedlings are visible run the Dutch hoe between them, which not only destroys the weeds, but greatly encourages the growth of the crop. The rows should then be weeded, and the crop thinned as early as possible, for all surplus growth is at the expense of the permanent crop. I cannot too strongly condemn mixed cropping, or sowing two crops together, as Lettuce and Parsley amongst Onions, and Broad Beans amongst Potatoes; this is of itself enough to give a weedy self-sown aspect to the best crops, and no advantage is thereby gained. It is quite distinct from intermediate cropping, which, in some cases, is highly favourable to both. Parsley, herbs, and salads, that are in daily demand, should be grown on narrow borders, clear of the walks but convenient for gathering. As regards varieties I would not recommend an experimental system of growing all new kinds, as the most likely to furnish a constant and reliable succession, nor yet be prevented by prejudice from adopting any real improvements. I would rather recommend a few of the most promising kinds to be tried each year, and select from them for permanent varieties, when convinced of their superiority by comparison of growth, and suitableness to locality, &c.

Seeds should be procured from reliable sources as nothing is dearer in the end, or more vexatious, than bad seeds. If you cannot rely on all the seeds germinating it is impossible to have satisfactory results, and patches and gaps are a great eyesore. I would also say—select for yourself, for all collections of seeds contain some that you do want and many that you do not. No one can select for you without knowing the requirements of each individual place. Always have enough and to spare, as the season for sowing some crops is soon lost, and unless you make provision for failure by duplicate sowings great inconvenience, or the loss of a crop, may result. There is nothing gained by hurrying seeds into the soil when it is in a sodden or bad state, as in cold ungenial springs like the past later sowings make most rapid progress. All kinds of seeds that are sown in beds and transplanted to permanent quarters, should not, on any consideration, be allowed to get drawn or starved in the seed-beds. If the ground be not in readiness for their reception, as soon as large enough they should be pricked out in nursery beds, and carefully removed afterwards. Peas are almost universally a favourite crop, and some extra attention is necessary to have them in season as long as possible. The earliest sowings should be considerably thicker than late tall-growing kinds. I find the system of growing the late kinds in trenches decidedly an improvement on light lands, and it may also be adopted with good results for Scarlet Runners, and any crops that suffer from drought, and continue prolific according to the amount of food supply available. Mulching forms an important operation in summer cultivation, and, if done neatly, need not be at all unsightly. Strawberries, especially, are benefited by it. Some market gardeners apply it early in spring, covering the rows as well as the ground between them. There is no gain, as regards economy of labour, in neglecting neatness and order, the difference between a garden kept systematically clean, and one where "weeds run to seed," can only be appreciated by those who have tried it.

Exhausted crops should be cleared from the ground immediately, as by making surplus growth they not only rob the land to no purpose, but give an impression of dismal desolation and decay which should be as much avoided in the kitchen garden as in that portion of the grounds devoted to ornamental gardening. James Groom.

Henham.

[We doubt if a formidable series of walks, edgings, &c., are necessary in the kitchen garden at all. They are costly to form and troublesome to keep. In the best cultivated kitchen gardens we have ever seen, the only walks are alleys between well-grown crops.]

FARMERS' GARDENS.

To avoid all objections that may be made to a farmer's kitchen garden, we wish to suggest that it be located in the field, and be cultivated field-fashion, ploughed as for all other field crops, planted in long rows, and cultivated by horse power. No fence is necessary. In fact, a fence around a kitchen garden is a nuisance, occupying uselessly good land, impeding the facilities for labour, and furnishing a refuge for weeds. Besides, the garden should not occupy, continuously for a series of years, the same site. It is a great deal better that its location should be changed occasionally, so as to secure a fresh soil. By a judicious use of a variety of manures the old garden may be kept productive, but it requires more skill, and a greater outlay, than most farmers are willing to bestow upon it, to keep a garden up to the highest point of productiveness for a score of years. The Asparagus bed must have a fixed habitation, and some of the small fruits usually cultivated in the garden, such as Currants, &c., are not easily changed. The Asparagus bed we should keep on the same spot indefinitely, for the shoots from an old bed we have found, under proper culture, to be more vigorous than from a new one. We are now cropping Asparagus from the same roots which supplied the table of our progenitors. With an annual top-dressing of compost, they continue to yield bountifully. The smaller fruits might possibly, under the same treatment, continue to thrive indefinitely, but it would be necessary to cut out the old mossy stems, and bestow an amount of labour upon their cultivation, which is entirely unnecessary in the care of Asparagus. So far as our observation goes, it is more profitable to renew the roots and occasionally change the site of the fruits. And as for Melons and Vines of all kinds, Potatoes, Beets, &c., everybody knows that they flourish best on a fresh turf. With no fence around the garden, its sight may as easily be changed as the site of any field crop. As to the size of a garden, this must be regulated by the size of the family, but let the supply and variety of vegetables be liberal. We once heard a young farmer say that the producers could not afford such a variety of vegetables as citizens and mechanics. This idea, we suppose, is founded on the old principle that shoemakers' wives must go barefooted, and dairymen's families without butter and cheese. Whatever the principle, we have no hesitation in pronouncing it wrong. It is true that the tendency with most producers is to stint themselves in the consumption of their own products, as these are their resources for money, the great end of life with too many persons. There is work to be done in the garden, even under the best system of culture, but with the garden in the centre of a field, or with a border of turf between it and the boundary fence of the field, most of the work can be done by horse power, and at a quarter of the expense of the old mode of hand culture—and we are confident that if farmers will only try this mode of gardening, their prejudices against horticulture will be dissipated as is the dew in the morning sun.—"New York Times."

The True Rhubarb in England.—It will be recollected that some years ago (1867) M. Dabry, the French consul in Hankow, succeeded in obtaining living roots of the mother-plant of Rhubarb, which were sent to the Société d'Acclimatisation in Paris, and, although badly injured, were brought to full development through Dr. J. L. Soubeiran. The species was determined as a new one (Rheum officinale) by Baillon. Since then the plant has been grown at other places, and, according to Professor Flückiger, is so handsome as even to deserve a place as an ornamental plant in public parks and gardens. At Flückiger's desire, Hanbury induced the proprietors of the great Rhubarb plantations in Bodicott, Oxfordshire (Messrs. Rufus, Usher, & Sons), to grow the new variety and prepare some for market. The result—on the small scale—has shown that careful treatment will undoubtedly produce from it Rhubarb exactly identical with the best Chinese.

Where are Lentils to be Bought?—Will you kindly inform me where in London I can obtain them?—A. X. A. [At Mr. Gaines', Covent Garden Market, who supplies both Lentils and Lentil-flour.]

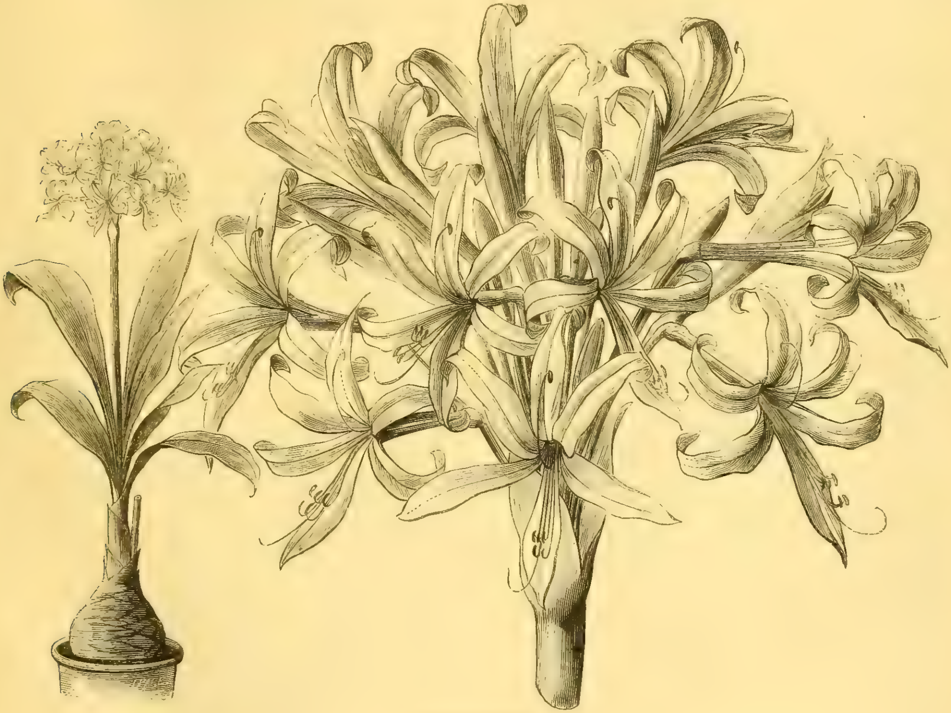
THE INDOOR GARDEN.

ORCHIDS IN BLOOM AT STAMFORD HILL.

A few days ago I called to see Mr. Bockett's splendid collection of Orchids at Stamford Hill. Amongst other fine plants was a magnificent display of Cattleya Mossiæ, consisting of many superb varieties; some of them were almost as light-coloured as the scarce C. Wagnerii, and others nearly as dark as C. labiata. One beautiful form had a lip with a deep purple centre and pure white margin; another with immense flowers had in the lip almost equal proportions of crimson and deep orange. Of this Cattleya there were some 200 expanded flowers, and grouped, as they were, together at one end of the house, they had a strikingly grand effect. Standing near them were two splendid examples of C. lobata, bearing fourteen spikes with from five to seven flowers each. I also noticed four or five plants of C. Mendellii, and several examples of Lælia purpurata. Associated with these were likewise Aerides Fieldingii and A. Lindleyanum, both extremely strong and vigorous; here their growth is slower, but much more satisfactory than when made in more heat. In an adjoining house were numbers of the lovely Cypripedium niveum, bearing some sixty flowers; Vanda cristata, several spikes; Dendrobium Parishii, Odontoglossum citrosmum roseum, O. Roezli, both the yellow and purple-eyed varieties; several plants of Lælia purpurata, with from seven to nine spikes each; Saccolabium guttatum, Phalænopsis Luddemanniana, Vanda suavis, Cattleya Aclandiæ, Sobralia macrantha, Cypripedium Stonei, C. Hookeri, and C. Veitchii. In the Odontoglossum-house were twenty plants of O. Alexandræ in flower and about as many more coming on; O. cristatum Dayanum, twenty-three spikes; O. Pescatorei, O. odoratum, O. nævium, Oncidium macranthum, very strong; Mesospinidium sanguineum, with fifteen spikes; Epidendrum syringæthyrsum; E. paniculatum; also a number of fine plants of the several kinds of Masdevallias, amongst which was a grand example, bearing nine spikes, of the one known amongst Orchid growers as the Bull's-blood variety (M. Harryana sanguinea); it may be said there is nothing in a name, but surely this is an ill-chosen name for such a magnificent flower.

T. Baines.

Griffinia ornata.—This is a beautiful, new winter-blooming, bulbous plant, from Brazil. It has elliptic-oblong leaves, the margins of which are so much recurved that a cross section would almost describe a semi-circle. The flower-scape is from 12 in. to 18 in. in height, and bears an umbel consisting of about two dozen flowers, forming a spreading head of some 8 in. or 9 in. in diameter. The flowers are of a delicate bluish-lilac fading off to nearly white, and remaining for a considerable period in beauty. Some good examples of it may be seen in Mr. Bull's Nursery in the King's Road, Chelsea, where it is found to be easily managed and a good addition to handsome flowering bulbous plants.



Griffinia ornata.

BEGONIAS AND THEIR CULTURE.

Amongst stove plants, few combine the desirable properties of a long, and in some cases almost continuous, habit of blooming, with freedom of growth, so well as the different kinds of Begonia. Indeed, their well-known character in this respect often causes them to suffer from neglect, in a way that precludes the possibility of their true worth being exemplified. They are generally grown without sufficient light in dark corners, under the shade of other plants, whereas they are essentially light-loving subjects, requiring to be kept near the glass, with very little shade, even in the brightest weather. When otherwise treated, the leaves get too large, the shoots become unduly elongated, and the natural disposition to flower becomes reduced. From the day when the cuttings are first rooted, they require all the light that a well-constructed house or pit can afford, with a drier condition of the atmosphere than many stove plants need; but, as it seldom happens that in private establishments a separate house can be afforded them, or the atmosphere be made, as regards moisture, exactly in keeping with their requirements, the next best course is to place them as near the glass as they can be got, to shade little, and to give them as much air as is consistent with the well-being of other plants that may have to be grown along with them. In propagation, as in their after-growth, there is little difficulty, as they form roots in a few weeks; they may be struck at any time of the year when a temperature of 60° or 65° can be kept up at night. If they are inserted about the middle of March, there will be plenty of time to grow them into good plants for autumn and winter flowering, during which season they will be found most useful. The tops of moderately strong shoots make the best cuttings; but, if these cannot be got in sufficient quantities, smaller pieces will do. Cut them to a joint, retaining the latter to form the base of the cutting, with a couple of joints above. Pot them singly in 3-in. pots, with a little drainage in the bottom, half filled up with sandy peat—the remainder all sand; and do not give much water until roots are formed, only just enough to prevent the leaves from flagging. Owing to their succulent nature, if kept too wet, they are liable to rot; neither must they be kept too close under the propagating glasses. In three weeks or a month they will be well rooted; then remove them altogether from under the glasses, and place them in the lightest part of the house. They should be kept at 79° at night, and 10° higher during the day. Move them into pots 4 in. larger than those they are in. They do best in four parts good fibrous loam and one of leaf-mould or rotten manure, with enough sand to allow the water to percolate freely through it; for, although from their quick habit of growth they require an abundance of moisture at the roots, still they cannot stand anything approaching stagnant water in the soil. Stop the points of the shoots to induce them to make bushy growth, and do not shade, except during the middle of the day in very bright weather. Give plenty of air early in the morning, but economise sun-heat, by shutting up whilst the sun is upon the glass, damping the plants slightly overhead at the same time. About the end of July they will need shifting into their blooming pots. The size of these must be regulated by the more or less vigorous habit of the kinds grown. Such sorts as B. manicata will need much more root-room than weaker varieties, like B. fuchsioides. 9-in. or 10-in. pots will be large enough for such kinds as the latter, while the former should have pots 12 in. or 13 in. in diameter. Use similar soil to that into which they were last put, but do not now break it so fine; again pinch out the points of the shoots of plants that do not appear to be sufficiently furnished; and place a few sticks to train them out, so as to admit plenty of light to the centre. Do not give too much water until the roots have got hold of the soil, and treat them in other ways as recommended in the earlier part of the summer. By the middle of September they will have grown to a useful size for general purposes, as it is not desirable to grow these Begonias very large. The atmosphere should now be a little drier, and the temperature kept about 60° at night, and 6° or 8° higher during the day. Many of this family will bloom during the summer season, but for the purposes under consideration it is not well to encourage them to do so, as their flowers are of much more service in autumn and winter. Some of the old-established kinds will be found well adapted for use at this season. When the pots are full of roots they will be benefited by occasional applications of manure-water, especially during their time of flowering. When they have done blooming it is best to destroy the plants, except such as are required to provide cuttings for another year. For this purpose it is necessary to give them proper attention, for if neglected they do not make shoots suitable for growing on freely. The following sorts will answer well for autumn and winter blooming:—B. insignis, B. fuchsioides, B. manicata, B. Prestoniensis superba, B. Digswelliana, B. Sedeni, B. Ingramii, and B. cinnabarina. One great recommendation belonging to Begonias, is their immunity from insects, as they are rarely affected with any of the pests to which stove plants are subject. T. Baines.

Passion-flowers.—The notice of Passion-flowers given in your number of May 27 very much interested me. I have planted Passiflora quadrangularis var. alata in a greenhouse with a southern aspect. It has merely had the frost kept from it in winter, and the plant thrives and does wonderfully well. This has been a pleasant surprise, for there were great doubts expressed about it at first. The only thing I should add is that it has not yet blossomed quite satisfactorily. The flowers had just opened, and then they have fallen off. They appear in the early days of April, and if they could only be retarded for a few weeks I think they would do well another year. At all events, it is satisfactory to know that this plant will exist quite well under favourable circumstances out of a stove.—H. Ewbank, *Ryde.*

The Greenhouse Yuccas.—Of these Y. aloifolia, Y. variegata, and Y. quadricolor are perhaps the handsomest and most generally useful. The second named is the best in these respects. Quadricolor is pretty, but of slower growth. Any of the three make good vase plants, but whether employed in the drawing-room, or out-of-doors, they should be placed at arm's length, for their spines stand out like an array of spear-heads. They all grow freely out-of-doors in summer, but they progress rapidly under glass, and soon make good specimens. In my particular case the plants have to be often moved about for decorative purposes, and unavoidably get their bottom leaves injured, which disfigures them. I am, therefore—inasmuch as we do not want tall Yuccas—in the habit of cutting the plants periodically and striking the tops, which are generally about 18 in. high to begin with. The old stumps are put aside to sprout, which they do readily, and I have often had more stock than I wanted. The work of cutting over and striking should, however, be performed at the proper season, which is about the beginning of April. The tops will strike with tolerable certainty at almost any season if they get heat enough, but the old stumps are apt to gangrene and die back unless they are quickly excited into growth; and this is most easily done early in summer, when they begin to grow naturally. My plan is to cut the tops off with a sharp knife, and pot them in 7-in. pots in a light compost, consisting of loam, leaf-mould, and sand, and plunge them in the Pine-bed in the full sun. They strike directly, and root so freely that they need shifting on very soon afterwards. They should be transferred to the greenhouse as soon as they are fairly established in the cutting-pot, for a warm house is not the place for them afterwards. The old stools are also better in a dry, warm corner of a greenhouse than anywhere else. They soon push numerous young shoots just below the cut, and if these be taken off when they have a bit of bottom to them, they can be struck in the same way as the tops.—Chef.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

A Specimen Pot Rose.—In the splendid group of Pot Roses exhibited by Mr. Turner at the Royal Aquarium last month, a plant of Paul Perras, some 8 ft. high, was carrying 200 blooms! The history of this specimen is noteworthy as showing not only the size to which a pot Rose may be grown, but the healthful and vigorous longevity at which it may arrive when well managed. This plant was purchased ten years ago from Messrs. Lane, who had exhibited it for ten years; it has therefore been serving the purposes of exhibition for twenty years, and is yet strong and vigorous.

Blue Hydrangea Flowers.—I live in the Weald of Sussex, but I am surrounded by a great variety of soils. The Hydrangea is always pink in clay soil, but blue in peat, which is about a foot deep on the Sussex iron ragstones. I have observed two Hydrangeas not more than 200 yards apart, one of which was blue, the other pink, the former being in the peat soil.—Correspondent "Journal of Horticulture." [Mr. Lane, of Berkhamsted, informs us that when he pots Hydrangeas in peat, the flowers produced are blue but for one year only. In the same pots the following year the flowers are of the usual pink colour.]

Odontoglossum vexillarium.—This grand Orchid should find a place in every cool Orchid-house. I have a small plant of it here now in a pot about the size of a breakfast cup, with sixteen blooms on one bulb, some of which measure 3½ in. by 3 in., and are of the most lovely glossy pink imaginable, with a pure white centre and yellow pencilled eye. While speaking of cool Orchids that require to be kept constantly moist at the root, I find all such as are in pots glazed outside thriving better than those that are in common porous pots, because the glazed pots retain moisture more steadily, with less frequent watering than unglazed pots. These pots would also suit many other plants that require a plentiful and steady supply of moisture.—D. Thomson, in "The Gardener."

Pancratium rotatum.—This American bulb is, according to the editor of the "Gardeners' Monthly," quite as handsome as many of the imported Lilies and other grand plants from abroad. It is not at all abundant in cultivation, and, practically, it has yet to be introduced.

TREES AND SHRUBS.

NEW SHRUBS AND TREES AT THE CHATEAU DE SEGREZ.

WHEN spending a day recently at the Château de Segrez I noticed the following new and rare trees and shrubs growing in that unrivaled collection, some brief account of which may not be uninteresting. Among others was the Evergreen Plane (Platanus cuneata), from the mountains of North America, an exceedingly rare tree in European collections, indeed Monsieur Lavallée informed me that he had never met with it or heard of it elsewhere; it was sent to him as a variety of Maple by the person who brought it from America, but this he soon discovered to be a mistake; apparently it is not quite hardy, as one of his two plants was killed last winter; the other, in a more sheltered position, was, however, wholly uninjured; in the milder parts of this country it would probably be quite hardy, and as all the other members of the family are deciduous, it will, when better known, undoubtedly prove a great acquisition, as its foliage is very ornamental. Deringia celosiodes variegata is a beautifully variegated shrub, new to me, and one which will in all probability prove quite hardy in this country. Euonymus angustifolius is an uncommon shrub now covered with a profusion of curiously shaped small dull red blossoms which give a singular appearance. Viburnum occicoccos is considered by M. Lavallée to be one of the most valuable of its family, as it produces its pure white blossoms, followed by handsome scarlet berries, almost all the year round. Eleagnus longipes, also known under the name of E. edulis, from its producing edible fruits resembling those of a Berberis, is also, in his opinion, a valuable and ornamental shrub, and a variety but seldom met with in collections. In Cratægus the collection is exceedingly rich, but perhaps the three most remarkable varieties are an unnamed kind received from Kamskatka, very dwarf and bushy in habit, producing conspicuous large white flowers in abundance, and in the autumn handsome, brightly-coloured fruits. This M. Lavallée proposes to name Cratægus atro-purpurea, and considers it quite distinct from any other variety of the family. C. stricta is a curiously erect and pillar-like growing form of the common Whitethorn, which I have never seen elsewhere. C. tanacetifolia is an exceedingly distinct and ornamental form, owing to its curiously glaucous foliage; it seems to be an abundant bloomer, and is much later in opening its flowers than most others of the family. A fine bush of the white-blooming Ceanothus velutinus, with thick leathery foliage, and now covered with blossom, was interesting, inasmuch as I believe the variety has been for some years lost to British gardens, at least the nurserymen who sent it to me some years ago informed me that they could no longer supply it, and I have never seen it offered by any other firm. In Philadelphus the Segrez collection is very rich, possessing no fewer than fifty-five varieties of this beautiful and usually sweet-scented flowering shrub, commonly but erroneously known as Syringa (the proper designation of the Lilac family), and also more appropriately as Mock Orange; of this large number the two best and most distinct are probably P. hirsutus, an exceedingly profuse bloomer, and P. laxus, which has the largest individual blooms of any, being at least four times the size of the variety known under the name of grandiflorus or speciosissimus, but somewhat later in opening its blooms than that variety. A very distinct and handsome Palm, recently received from Oregon by M. Lavallée under the name of Pritchardia filamentosa, if, as it is said, it will probably prove perfectly hardy, will be a most valuable addition to the small number of hardy Palms now in cultivation in our gardens, which do not exceed four or five varieties. W. E. G.

The Cause of Stem-bleeding in Conifers.—Is there any cure for a Mexican Pine, the sap of which is exuding from the stem; it first appears in the shape of small drops, and then forms patches which present a raw fleshy appearance. First, the ends of the new shoots die off, and then whole branches.—K. C. [The cause of this was explained in my "British Winter Garden" twenty-four years ago. Lest your correspondent cannot lay his hand upon that book, I quote from the chapter (p. 58), which exposes the evils arising from pot-bound trees:—"I have seen Cedars of Lebanon, after growing well for several years, become unhealthy, with portions of resin oozing out of the stem, caused by the compressed vessels of the roots being unable to pass it; in most cases such plants became of a sickly yellow in their foliage, and frequently die. Thousands of such plants have been lost to the country from this cause alone. I can scarcely travel a few miles in any direction without seeing proofs of it in different stages. Some Cedars of Lebanon, which I knew near Derby upwards of twenty years ago, are not much larger than when I first saw them."—W. BARRON, *Borrowash.*]

The Chili Pine (Araucaria imbricata) in the Isle of Wight.—There is an Araucaria in this parish (St. John's, Ryde) which is not much known, but it is by far the finest I have ever seen, and all those whom I have taken to see it have expressed the same opinion. It is growing in Miss Johnson's garden at Willow Bank. I do not know that it has ever been measured with accuracy, but it certainly would seem to be about 36 ft. in height. The tree is faultlessly symmetrical, like the Irish specimen of which you gave a coloured plate (see p. 84), and it is quite feathered with branches down to the ground; I am sorry, however, to say that there are some brown leaves on it here and there. I think the soil is getting worn out, and ought to be enriched again. I should add that the tree of which I speak produces cones; this has happened several times.—E.

How to Stack Timber.—In stacking timber the following suggestions may be useful:—1. Let the "skidding" as a rule be placed as nearly as possible level both ways, and in no case allow the upper side of it to be less than 12 in. distant from the ground. It will then necessarily follow that, whether the stacking ground be level or upon the hill-side, there will be ample space for ventilation under the timber to be piled thereon. 2. Let the butt-ends of the logs be placed to the front, and keep the back or top ends of each tier slightly higher than the butts, for facility in withdrawing them from the stack. 3. Let the skidding over each tier of logs be level, and place short blocks under it as packing pieces, 1½ in. or 2 in. in thickness, upon every log. The advantage of this is that by removing the packing pieces, any log in the tier between the two layers of skidding may be withdrawn from the stack without disturbing the remainder. 4. If the timber to be stored cannot be placed in a permanent shed, it should, with the view to its preservation, have a temporary roof placed over it. The size of the stack, therefore, should be considered in setting it out, limiting the breadth or span to 25 ft. or 30 ft. 5. Let each tier as it rises be set back 6 in. to 8 in., to enable the converter to get over it without a ladder, he will find it convenient for examining and selecting his logs for conversion.—"Laslett's Timber and Timber Trees."

Law for the Encouragement of Planting.—The law in New York State, making provision for planting shade trees along the highway is as follows: Any inhabitant liable to highway tax who shall transplant by the side of the public highway any forest shade trees or fruit trees of suitable size, shall be allowed by the overseers of highways, in abatement of his highway tax, 1 dol. for every four trees set out; but no row of Elms shall be placed nearer than 70 ft., no row of Maples or other forest trees nearer than 50 ft., except Locust, which may be set 30 ft. apart; fruit trees must also be set at least 50 ft. apart, and no allowance as before mentioned shall be made, unless such trees shall have been set out the year previous to the demand for said abatement of tax, and are living and well protected from animals at the time of such demand.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Paulownia imperialis.—This is now in bloom at Hampton Court, where there are several specimens of it. Its flowers are borne in terminal clusters, and are as large as those of a Gloxinia, which they resemble in form, the colour being a delicate bluish lilac. Its general appearance as seen at a distance is that of a tree enveloped in faint blue smoke.—B.

Thuja elegantissima.—This beautiful golden form of the Chinese Arbor-vitæ, originally sent out by Messrs. Rollisson, of Tooting, has proved of greater value than most of the variegated Conifers introduced to gardens. It is now brought to the London market in various sizes, where it realises a good price. The presence of a plant in the flower market is, perhaps, as valuable a test of merit as any certificate.—J. H.

Trees in Trafalgar Square.—Permit me to suggest an extension of the good taste by which trees have been planted up Northumberland Avenue from the Embankment to Charing Cross, viz., that they should further be planted all round the edge of the roadway, on the curb of the pavement, of the centre part of Trafalgar Square; so that the green leaves, mingling with the view of the fountains, may relieve the colourless aridity of the extent of stonework. So writes a correspondent of the "Builder"—thus giving advice often before propounded in THE GARDEN, but improvement in the planting of street trees in London moves slowly.

TRUFFLE HUNTING AND PLANTING FOR TRUFFLES.

TRUFFLES, like caviare, are things of which many talk who never saw or tasted them; and even of those who have been lucky enough to sit down to a turkey stuffed with them, we fancy the majority have no notion how they grow or where they come from. Housekeepers, of course, know that they come in tins or capsuled bottles, from shops like Fortnum and Mason's, or Crosse and Blackwell's, and that they are about the dearest thing that can be had in the way of flavouring, but their knowledge usually ends there. People brought up in Wiltshire or Sussex, may possibly, if they were given to chatting with the labouring men, have heard the tradition—for it is now little more than a tradition—of Truffle-hunting, with dogs specially trained for the purpose, in the Oak-coppices on the edge of the Weald, or in the broad woods that stretch from Longleat to Bruton. You may still meet an old smock-frocked fellow who knows all about Truffles, and who remembers the time when people used to think they could make money by seeking for them; but the attempt has almost died out in England, and now certain parts of France are almost the only hunting grounds where this strange underground Mushroom is sought. As with other benefactors of the human race, oblivion has been the lot of him who discovered the real Truffle—"black diamond of modern gastronomy" as an enthusiastic Frenchman calls it. There is a white Truffle, a poor tasteless sham, which grows abundantly in the sands of North Africa and Syria. This Terfez, as it is called, much used still by Arabs and Syrians, was well known in Greek and Roman kitchens. Some, indeed, go so far as to think that the Mandrakes which Reuben found, and brought to Leah, and which Rachel longed for, were Terfez. However this may be, the Truffle-trade was so important in Juvenal's time, that in one of his satires he says:—"Don't trouble yourselves, you Libyans, to do any more ploughing" (North Africa was then the granary of Rome); "we shan't complain if you send us Truffles enough." But these were the Terfez, a poor kind of thing, needing to be spiced up itself, instead of being used to give an indescribably delicate flavour to that which is cooked with it.

Truffles in the Middle Ages.

In the dark ages, cookery died out like many other classical arts. Men went back to the old Homeric roast and boiled. The tradition of Truffles was only kept alive in the books of Avicenna and other Arabian physicians. But with the revival of letters came the revival of cookery as a fine art. Men read about underground tubers in the Greek and Roman writers, from Theophastrus downwards, and so they began digging and cooking. There were rival popes in those days, and they were rivals in gastronomy, as well as in other things. Avignon and Rome vied with one another, not only in eloquent anathemas, but in elegant entertainments. Provence, too, the merry land of troubadours, was also a land of good cheer; nor was the court of Burgundy, enriched by its wealthy Flemish subjects, at all behind in the matter of dainty fare. In 1438, John the Good, then holding court in Brabant, paid six livres eight sols to Jehan Chapponnel, "pour don quant nagaires il apporta à M. le duc des Truffes de Bourgogne." A little later, in Pope Nicholas the Fifth's day, the cookery-book of Cælius, a Roman epicure of the time of Trojan, was found in some abbey library. This was loud in praise of Truffles, "daughters of the earth and the gods;" and no doubt the publication of it made them still more popular among the scholars of the Renaissance. But, though popes and Italian princes ate Truffles; though Platina, and Ciccarelli, and Matthioli wrote about them; though Savonarola denounced them, urging men to beware of them, Southern France has always been their chosen home. The Black Truffle (the most highly flavoured) grows in Provence, in Poitou, in Southern Dauphiné, &c., more abundantly than elsewhere; it does, indeed, grow northward, but so sparingly that the whole produce of the Forest of Vincennes, for instance, used to be leased, about half a century ago, for between three and four pounds. Truffle-eating took a grand start in the days of the Regency—days of "petits soupers," those anticipations of our late dinners. Read about them in Brillat-Savarin, the delightful historian and anecdotist of the culinary art; to read him is almost as good as eating them sautées (as they ought to be) in champagne—in which state they are as different from the dry things used in England to flavour poultry, as the wit which drops fresh from a brilliant talker's mouth is from the stale jokes of a jest-book. Pliny calls the Truffle a vitium terræ, something wrong with the ground, which forms the Truffle by getting lumped into a hard mass; and he thinks to prove this by telling a story of some Roman general in Spain, who nearly had his front teeth pulled out, by getting them tightly fixed in a denarius, which was inside one of the Truffles that he was eating. "How could the coin have got there," asks the sapient naturalist, "unless the thing was just a lump of hardened earth?" Plutarch looked on them as a sort of thunder-bolt; he says, the four elements go to the making of them—earth, air, water, and the electric fire. He may be so far right, that all the Mushroom tribe are highly nitrogenous, and that in thunder weather a great deal of nitrate of ammonia is generated. More modern theories have been that the Truffles are, like Oak-apples and the robin redbreast of the Dog-rose, the work of some gall-insect. We shall see that there is a Truffle fly; there is also a Truffle beetle; but neither of them has anything to do with the production of Truffles. Others have thought that they were mere excrescences on the roots of the trees under which they are mostly found, and have, therefore, wounded the said roots as the Chinese are said to wound oysters to make them form pearls. Mushrooms, however, they are, and nothing else, *i.e.*, vegetables of that large class which is called cryptogamous, because its members hide more or less completely their arrangements for reproducing their species. How Ferns are really propagated has only just been discovered, and how Truffles grow is still a mystery. Do they grow from spores—microscopic seeds thrown off from the tuber? Or have they, like the Fungi which grow above ground, a mycelium—a network of soft threads forming a kind of root, and capable, under favourable conditions, of throwing up a fresh crop? This mycelium preserves the germs of life for a very long time; it is the vital part of those queer-looking cakes called Mushroom-spawn; but Truffle-spawn is one of these inventions for which the world is still waiting. Rather more than 100 years ago, Bradley, who thought that Truffles might be profitably grown in England, planted them as one does Potatoes, and the same plan was tried about the same time in Germany and North Italy. No doubt Truffles did come where Truffles were sown, but not in sufficient numbers, or with sufficient certainty, to make it worth while to cultivate them in that fashion.

Truffle Hunting.

There are Truffles *and* Truffles. Our native species is what the French call the Summer Truffle, light inside, and with far fainter smell than the Black Truffle. Naturalists sum up almost a score of different kinds, some of them merely flavourless lumps of leather; but the King of all is the Black Truffle—skin as dark as jet and covered with big warts; inside reddish or violet-black marbled with light veins. Its smell is indescribable; there is something of Lily-of-the-Valley, something of decayed leaves, the slightest *soupçon* of musk, and a very great deal of Truffle itself. Taste it in a Périgord pie, or, better still, if you are wintering in the south of France, get a turkey stuffed with fresh Truffles, and you will know more than pages of writing could teach you. The Truffle, then, is an underground Fungus, remotely connected, therefore, with that strange freak of Nature the Earth-star (Geaster hygrometricus), which is sometimes found in England, and which used to be sold at a seedsman's in Cornhill as "the Persian Everlasting Rose." I remember, when a school-boy, often flattening my nose against the pane and reading how this marvellous Rose, when put into water, would expand, and then shrivel up again when dry. I only lately found out that the said Rose is nothing but this subterranean Fungus, whose outer coating splits into a number of rays which, when damp, lie back like the petals of a flower, but, when dried, close tightly round the central lump. The object of this strange power of expansion and contraction is that the Fungus may work itself up to the surface. The Truffle has no such power of coming to the front; if not found out and dug up it ripens and rots away. The French generally use a pig in Truffle hunting. Such lean, long-legged swine! No wonder your French friends jokingly call them *porcs de course* (racing pigs) and *cochons-levriers* (greyhound pigs). The ancients, using the Terfez which grows in sandy soil, and is, therefore, easily discoverable, needed neither pigs nor dogs; but the pig was in use, both in France and Italy, quite early in the Middle Ages. An old writer says that people noticed that both the wild boars and also the pigs, that were turned in to eat the Acorns, now and then went Truffle-hunting on their own account; and so they got the idea of making their instinct useful. In the old times they used to put a strap round the pig's neck—as the Chinese do round the necks of their fishing cormorants—to prevent them from swallowing the precious tuber; but now, the animals are so well trained that, when they have rooted out the Truffle, they never touch it, but hold up their intelligent snouts for a bit of bread or a handful of Acorns. It is the oddest sight in the world to see a Provençal peasant plodding about in an Oak copse, a lean sow following him like a dog, and "making a point" wherever her nose tells her that what her master wants is underneath. Dogs are used in some parts of France, chiefly in Burgundy, where they mostly hunt the summer Truffle. A well-trained dog costs £4. They train him by putting a Truffle into a box full of holes, burying it, and making the dog dig it out, always rewarding him for his find with a tit-bit of some kind. The breed is Italian; and during the Truffle mania, about the middle of the last century, it was introduced into England, Poland, and several parts of Germany. Many of the small

NEW PLANTS, &c.

Hoodia Gordoni.—This remarkable Asclepiad was discovered near the Orange River, S. Africa, by Col. Gordon, who made a drawing on the spot, which was published in Masson's "Stapelia Nova," in 1796. For nearly half a century nothing more was known of it than this figure, which seemed so extraordinary that our Stapelia growers used to speak of it as a fiction. The plant, however, was re-discovered in quantity by Mr. Burke, a gardener of the Earl of Derby, who was sent out at that nobleman's expense, and living plants were cultivated at Knowsley, but it is not known that they flowered. In 1874, Sir H. Barkly, the Governor of the Cape, sent to Kew two fine specimens from Heukries, near the Orange River, one of which died, but the other arrived in perfect condition and flowered in 1875. The plant has tufted, thick, spinose, Euphorbia or columnar Cereus-like stems a foot or more in height, and towards the apices of these the large Œnothera-like flowers are produced generally in pairs. The individual flowers are from 3 to 4 in. in diameter, and of a soft lemon-yellow colour, delicately flushed with rose. It is a most remarkable and effective plant, and when more plentiful will be popular with all growers of rare succulent plants.—"Botanical Magazine," t. 6228.

Odontoglossum tripudians.—A showy Orchid, a native of New Granada, whence it was sent to Messrs. Veitch & Sons by M. Gustave Wallis. In general appearance it resembles a small-flowered variety of O. triumphans, the golden-yellow sepals and petals being beautifully blotched with brownish crimson, the lip being of a pale lemon-yellow, having a large blotch of brownish purple on the disc. Although not so large or attractive as its ally, O. triumphans, it is a welcome addition to one of the most popular groups of cool-growing Orchids.—"Botanical Magazine," t. 6229.

Vitex Lindeni.—An inconspicuous Verbenaceous shrub from New Granada, having ternate or quinate foliage and axillary peduncles, each of which bears two soft lilac-purple streaked flowers, which closely resemble those of some Gesnerads in general appearance. It is not likely to be useful for decorative purposes.—"Botanical Magazine," t. 6230.

Calceolaria tenella.—A dwarf and interesting little Chilian species, first found by Pöppig in 1823, and since re-discovered by Bridges in sandy places and on wet rocks near the rivers of the Andes and in Valdivia, at elevations of from 4000 ft. to 5000 ft. Seeds of it were recently sent to Messrs. Veitch by their late collector, Mr. G. Downton, from which flowering plants were raised in 1873. It is thought to be quite hardy, and if so it will be a pretty ornament to the rock garden, forming dense tufts of fresh green foliage, 3 in. or 4 in. in height, in the axils of which the golden yellow crimson-streaked flowers are produced on short curved pedicels

Arundo conspicua.—This is perhaps the most graceful of all the large-growing, ornamental Grasses. A native of New Zealand, and quite hardy in sheltered positions in the south of England. At Kew it forms a very attractive pot-plant in the succulent-house, where its graceful silvery plumes remain in beauty nearly all the year round. It was first discovered by Banks and Solander during Cook's first voyage, and abounds throughout the island of New Zealand, from the Bay of Islands to Otago and the Chatham Islands, growing in wet places, but it is found in no other part of the world. It is the Toe Toe and Kakaho of the natives, who are said to use the culms for lining their houses in the style of reed matting. The first figure of this plant appeared in the "Florist" for 1874—having been taken from a specimen 10 ft. in height, bearing forty-two of its elegant plumes. In the garden of Mr. G. F. Wilson, of Weybridge, is a specimen which flowers annually in great perfection towards the latter end of the summer. Herein lies one of the claims of the Arundo to rank above the Pampas as an ornamental plant. The Arundo sends up its culms and expands its feathery panicles by the end of July or the beginning of August, so that its graceful beauty can, in the average of seasons, be enjoyed during the succeeding three months; whilst with the Gynerium, the inflorescence often only just makes its appearance as bad weather sets in, so that its beautiful plumes are scarcely developed from the leaf-sheaths before they become weather-beaten and disfigured.—"Botanical Magazine," t. 6232.

Spiræa Thunbergiana.—This is an elegant small white-flowered Japanese shrub, and is known in some gardens on the Continent under the name of S. crenata. It is a most precious plant, either grown as a hardy shrub in sheltered positions, or for forcing the flowers, being very thickly produced among the small, lance-shaped, fresh green leaves, forming perfect wreaths of star-like flowers, which exhale a delicate spring-like perfume.—"Revue de L'Horticulture Belge," vol. ii., pl. 5.

Early Peas and Cherries.—We have been gathering Peas, consisting of Little Gem and Laxton's Unique, ever since the 7th of May. No vegetable is appreciated more than good home-grown green Peas, and, with a little trouble, which they amply repay, they may be had early, late, and in mid season. I used to say that if I were fortunate enough to get charge of cold lean-to houses I would grow Peas and Cherries. I have had my wish gratified. I have just now, although the houses have not been finished two years, ripe Cherries, large in size and fine in flavour. The Cherry trees occupy the back wall, and in front I have a stage, about 2 ft. from the glass. On the 27th of December I got as many boxes, 6 in. deep, 3 ft. long, and 11 in. wide, as made one row about 60 ft. in length. These I filled with good turfy loam and sowed the Peas thinly, one row in the middle of each box. They came up well and grew rapidly; when 6 in. high I sticked them with short bushy twigs. Here they remained until the 4th of April, when they began to bloom. Wishing to place bedding plants in the house to harden I removed them outside, and placed them close to the wall on the south side of an early Peach-house. Here, as I have already stated, I gathered Peas on the 7th of May, and very many since that date; in fact, for three successive days, beginning 31st May, we gathered Peas each day. Just now (on the 4th of June), owing to the hot sun beginning to injure them, they were placed on the north side of the Peach-house, where beautiful fresh pods have been produced. I may be told that there are plenty of Peas outside now; perhaps so, but only in the sunny south, not in Lincolnshire. I may add that last year I gathered Ringleader outside on the 29th of May, but this season my early Peas (sown in November) will not be in for ten days, except The Shah, from which I expect to gather pods this week.—R. Gilbert, *Burghley.*

Fruit Trees in Orchard Houses.—During this season of the year there is plenty of work in orchard houses; the trees should be syringed morning and evening plentifully, and freely watered—a healthy free-growing plant will take up a considerable quantity. The trees should also be surface-dressed. I have found malt-dust mixed with sewage excellent for the purpose, but it must be prepared a month before it is used, and after the water has been added to the dust the heap should be spread out about 1 ft. in depth; do not buy the malt germs, but the dust; maltmakers will know what is wanted. Thinning the fruit must now be commenced, leaving that at the base of a shoot; thin out isolated fruits and those on leafless shoots; but as in unheated houses the stones are not yet formed, the present thinning must not be final; pinch ill-regulated shoots, and put sticks to pyramidal trees that are not straight. As the Peach has a tendency to grow into a standard, all the top shoots of pyramids must be pinched; as a general rule, leave about five leaves; ventilate abundantly. Apricots may now be placed out-of-doors for a succession; in southern districts they will ripen well in the open air. Plums and Pears may also be set outside to leave room for the Peaches and Nectarines. Look closely after the brown aphis; Quassia chips, 4 oz. to the gallon of water and 4 oz. of soft soap added when applied, will keep the trees free from this pest; wash the under surface of the leaves thoroughly.—R.

Does the Phylloxera attack Roots of other Plants besides those of the Vine?—I find in Thomson's "Culture of Fruit under Glass" that numerous experiments have been made to ascertain if the Phylloxera of the Vine would attack or live on the roots of other fruit trees by planting them amongst the roots of Vines infested with that pest, the result being that it was found to attack those of the Vine only; nevertheless, it strikes me that I have read in some of the English gardening papers of instances of its attacking other plants beside the Vine, and I am anxious to know whether or not that is the case. Besides being used for wine making, Grapes here form the principal article of food for the working classes during four or five months of the year; they can be bought for something less than 1d. per lb., and some varieties grown here are equal in flavour, but not in appearance, to the best English hot-house Grapes. Therefore, the Turks have become very much afraid of introducing the Phylloxera to their vineyards, and the Government intend prohibiting the importation not only of fruit trees and Vines, but also of all sorts of plants, which is rather a serious matter in this country for amateurs who grow Orchids and all sorts of stove and other plants. Such a prohibition would injure English nurserymen; therefore, I wish to use my influence with the Turkish Agricultural Society to restrict the prohibition to fruit trees alone, and Vines, of course. Let me hope that some of your readers may be able to throw some light on the subject.—William Ross, *Constantinople.*

Hard Rusty Strawberries.—I have been unsuccessful with Strawberries in pots this season, owing to the fruit becoming hard and rusty. Having paid special attention to the watering and general cultivation I shall be obliged if any of your correspondents will explain what is the probable cause of failure.—F. F.

NOTES OF THE WEEK.

—— To Mr. Noble, of Sunningdale, we are indebted for blooms of the handsome and hardy Californian Rhododendron (R. californicum), a species too little grown. It is very hardy, and the growth does not perish from cold in spring. The delicate rose-lilac flowers and rose-coloured buds are very ornamental.

—— Some out-of-door Strawberries have come to the London market from Devonshire, but they are very poor in quality. The Strawberry season will probably be more than a fortnight later than in 1875.

—— We in England never find the Pansy and hybrid Violas, as they are called, refuse to thrive, yet it would appear we have no such beauty to show as may be seen in Scotland, where the climate suits them better. Thirty thousand plants of hybrid Violas and Pansies are now growing in the flower garden at Eglinton Castle.

—— It would be difficult to add a charm to the common Hawthorn; the weeping variety is very beautiful just now, and well deserves a place among flowering trees. There is a young specimen of it in Hyde Park, near the Corner. Like most weeping trees, however, its highest beauty of form will not be seen till the specimen is old.

—— Broccolies, weighing from 14 lb. to 15 lb. per head, have been sent to Covent Garden during the last few days from Mitchell's market garden at Enfield. Not a plant of the crop of which these formed a part was lost during the past severe winter.

—— The effect of the Great Cow Parsnip (Heracleum giganteum) on the islands in the Regent's Park ornamental water is very fine now. This plant, however, should only be introduced to cultivated grounds or even woods with due caution, as it spreads so rapidly and is so vigorous in growth. It is best where its effect may be seen in the distance, and where it may do no harm by spreading.

—— In a letter from New York, one of our correspondents writes —"The time has again arrived when we must witness the destruction of our garden crops by the Colorado beetle. Egg Plants put out in the beginning of last month are already ruined, and Potatoes and Tomatoes are also being destroyed by the same irrepressible pest. What is to be done? Can no one find a remedy?"

—— We notice that the specimens of Asparagus which are said to be the finest produced near Paris, belong to the variety Rose Hative. Now that many of our cultivators recognise Conover's Colossal to be a distinct variety, it might be well to give a fair trial to this French kind.

—— Lord Kimberley, who is spending the Whitsuntide holidays at Falmouth among his tenantry, will shortly present a park to the town. It is being very tastefully laid out, and will, according to the "Times," be formally handed over by his lordship in the course of a few months.

—— One of the handsomest plants that for a long time have been seen in the flower market in Covent Garden is the old Phyllocactus Ackermanni, now seldom seen, but once popular in greenhouses. These are about three years old, scarcely 1 ft. high, and bear from two to six splendid blooms. They are grown by Mr. Puttick, of Acton.

—— We have received from the Lawson Company some trusses of a new race of Rhododendrons, which are likely to be an important gain for our garden. They are raised from Rhododendron Aucklandi crossed with R. Thomsoni and Everestianum. They are remarkable for unusual size of bloom, with very delicate and distinct markings, and we hope to figure some of the more striking varieties in The Garden. They are quite hardy, having stood several years in the Bangholm Nurseries.

—— The major variety of the St. Bruno's Lily, of which a coloured plate was issued in the first number of The Garden this year, now shows a charming and extraordinary peculiarity in sending up large single flowers from the root. These open before the flowers on the spike, and are larger, resembling the snow-white blooms of a Pancratium. Generally one solitary bloom of this kind grows on each plant, and it seems as if strange flowers appeared in the bed. We shall, in a short time, publish an engraving of this flower from the pencil of Mr. Burbidge. This peculiarity of the plant makes it all the more valuable, and points to it as distinct from the ordinary type of St. Bruno's Lily. It may be seen in flower at the Wellington Nurseries, St. John's Wood.

—— A meeting was held at South Kensington, on Friday, for the purpose of considering what steps should be taken to commemorate the services to horticulture of the late Louis van Houtte. It was resolved to open a subscription list for the purpose of founding a prize to be called the Van Houtte Prize (probably a medal), to be awarded at the Quinquennial Exhibition at Ghent. A committee was formed, with power to add to their number, for the purpose of giving effect to the resolution, and though the number present was but small, about fifty guineas were at once subscribed. From the numerous letters received, it is obvious that the movement has the hearty support of the leading nurserymen of the country. Mr. Harry Veitch has been appointed secretary, to whom subscriptions should be forwarded.

—— Cauliflowers now come in abundance, and large and well-formed, from the Paris market gardens to the London market. English Cauliflowers are also getting plentiful.

—— That elegant little Grass Agrostis pulchella forms a graceful pot-plant at this season, and is grown for the London market—the best plants being autumn sown.

—— The fine Ramanas Rose (Rosa rugosa alba) is now in blossom at the Hale Farm Nurseries, and very beautiful it is. The little Pyrenean Rose is also in flower. We hope to see both plants at home in many gardens soon.

—— The Rocky Mountain Yellow Columbine (Aquilegia chrysantha) does not come true from seed here, but gives birth to a beautiful race which seem intermediate between it and A. cœrulea, and which are very charming plants. A. chrysantha is a better perennial than most Columbines both in this country and its native one.

—— A very Double Pansy "large and full," as the catalogues say, is a novelty, and a far finer flower than one would expect, though not so showy or beautiful as a good single flower. The one we allude to is called Lord Waveney, and is now in bloom in the Hale Farm Nurseries.

—— The true large Iris longipetala, now in bloom, is a fine species with the falls of the flower beautifully netted with violet, so as to remind one of the blossoms of the Zygopetalum Mackayi. Distinct Irises are very desirable, but there are a great many intermediate forms which are not worthy of cultivation. There is a curious and fine hybrid in flower at Ware's, between I. iberica and apparently one of the dark German Irises.

Gardens in New Guinea.—Some notion of the luxuriance of the vegetation of the Maclay Coast may be got from the following: —So thickly is the coast of Astrolabe Gulf covered with vegetation that houses are almost invisible, the only signs of habitation being perhaps columns of smoke. If, however, more careful observation be made, separate groups of Cocoa-nut Palms will be noticed. The plantations or gardens of the natives are seldom laid out near their huts, but, for the sake of security, are hidden in the jungle. A clearing is made by cutting down the underwood, and, after it has been dried in the sun, it is set on fire. The space thus prepared is then surrounded by a hedge, consisting of two rows of a kind of Sugar-cane (Saccharum spontaneum), which soon takes root, the opposite stems being fastened together with Lianas, and the space between the rows filled with rough-hewn logs. In less than a month's time a new plantation is put in full order and planted with Bananas, Sugar-cane, and the Colocasia and Dioscorea. The tools which are used for this purpose are very simple, being the udja, a strong stick about two yards in length, and sharpened at one end—the implement of the men; and the udja-sab, which is used by the women, a kind of small spade. The Papuans have throughout the year a rotation of fruit and vegetables. Every day the women go forth to fetch from the plantations what is necessary for the same evening and the following morning. The coast people have the most property in cultivated land.

Character in Gardens.—Were each to consult his own taste in the garden, instead of imitating his neighbour, every garden, large or small, would assume a character of its own. This would give variety and the sense of novelty or individuality to each garden, which could hardly fail to enhance the pleasure to be had from it. The garden is the very place in which to ride a hobby. It is much safer to do so than in any other occupation—for horticultural hobbies are always innocent, harmless, and, relatively to others, cheap. One lady, for instance, delights in Lilies—let her garden, therefore, be mainly a garden of Lilies. Another cares for nothing but Roses—what more charming than a garden of Roses! Another rejoices in spring flowers above all others—let hers be a spring garden. And so with all other plants, trees, shrubs, and flowers. Each man and woman's garden should mirror forth, as it were, the individual taste. By amateurs selecting to grow most of those they like, room enough would be found to do their favourites justice.—D. T. Fish.

German high-mightinesses and grand-serenities fancied Truffle hunting would be great fun, and paid heavily for the dogs, whom the dutiful chroniclers of their little greatness call, in their ponderous Latin, *canes tuberario venatici*. Sussex shepherd's dogs have often been very sagacious Truffle-hunters. But, where you have to get your bread by Truffles the pig seems the most useful ally. He can dig much better than the dog in hard, stony ground. The dog gets sooner tired; his feet grow sore; and he is sure to stray after game, if there be any. In Provence—the special home of the Truffle—the only people who use dogs are the Truffle-poachers, of whom there are a great many. I once heard of a man who used to take both pig and dog; the pig began the digging, and then the dog finished it, and, taking the Truffle in his mouth, laid it at his master's feet. Human noses are seldom sharp enough to scent out the buried treasure; though there is a story of a sickly boy who kept himself and his mother by marking Truffles for his neighbours. Of course, some Truffles grow so near the surface that they make a little crack in the ground, which catches the eye of the "hunter." This is called in Provençal, hunting *à l'escarto* (by the mark). Another plan is carefully to poke down a thin iron rod where you fancy that the dying away of the Grass may be caused by the Truffle underneath having stolen all the nourishment. Your rod meets something hard; it may be a Truffle or it may be only a pebble. The last method is to watch where the Truffle fly settles or keeps fluttering about; you are pretty sure to find what you want if you mark that spot and dig down.

Truffle Markets.

The most interesting Truffle market is at Apt, a little town in the south of Vaucluse, in the very centre of the artificial Truffle grounds of which I shall speak by-and-by. Here, from the middle of November to the end of March, every Saturday, there is a crowd, and a din of chattering tongues, and a swaying among the blue blouses, such as you could not match out of France; while, if it be wet, the "Place aux truffes" looks like a chopping sea of brown, and red, and green, and blue waves, as the mass of umbrellas tosses up and down. Such higgling, too, as if life and death depended on a centime! "Marchander" is certainly a French weakness; and there's plenty of it here to make us certain that, in spite of difference of language, the Provençal is a thorough Frenchman. Well, the higgling goes on. Rich peasant proprietors bring out their stock, and battle manfully to keep up the price. Poor women, who have trudged in from leagues away with eight or ten little Truffles tied up in the corner of a handkerchief, will sometimes stand all day, on the cold stones, under the beating rain, rather than bate their price. Regraters go round, trying to pick up bargains, as towards afternoon the courage of the sellers begins to flag a little. The big purchases are generally made last; and then, carefully stored in a special fourgon, the precious wares are sent off to Carpentras. Peasants and dealers may be pretty well trusted to take care of themselves; it is the amateur buyers who suffer. "Put on your boots, my dear, and walk into the market and buy us a quarter kilo. or so of Truffles," says Madame Bonnechose to her dutiful husband. "Aunt Grognon dines with us to-morrow, and I want to give her a surprise. She has no children, you know." So père Bonnechose tries his hand at marketing; and ten to one some insinuating little dealer (he shuns the wholesale folks, thinking they'll be dearer) palms off on him a worm-eaten lot, the holes neatly filled in with black earth, or sells him, as a bargain, a splendid big Truffle, made up of several little things, stuck dexterously together with clay and bits of stick; or perhaps he buys a little bagfull. The edge of the bag was turned down, and the Truffles looked so black and fresh inside. So they were—those that he saw; but he didn't have the bag emptied out. The seller, a lively, pretty little woman, kept him in close talk till the money was paid—told him all about her farm and her turkeys and her husband's disagreeable relations. And so père Bonnechose gets "done," for the bottom of the bag is filled with any "kind of rubbish"—summer Truffles, caicou (smelling like rotten cheese), pebra, (pepper-truffle, smelling of petroleum)—stained with gall-nuts or sulphate of iron. The Truffle-bag is as deceptive as the old London "Strawberry-pottle" used to be. Sham Truffles sometimes make their way to Paris, compacted of bits of bad Potato, coloured and wrapped in a layer of Truffle-earth, to give something like the right smell. The real thing is by no means appetising to look at. The man who first ate a Truffle must have been almost as bold as he who first swallowed an oyster; but, despite the unpromising appearance, there is something in the smell which appeals strongly to the instinct of the epicure. There is plenty worth seeing at Carpentras; indeed I do not know any part of Europe more full of interest than the whole of the old Comtat (patrimony of the Popes). Some of the interest is very painful. The village of Bedouin, now a great Truffle-growing place, was cruelly destroyed in the French Revolution, and 180 of its inhabitants killed, because one night a "tree of liberty" was sawn through. Suchet, afterwards a famous general, commanded the destroying party. Carpentras has its old wall and gate pretty complete. It has a triumphal arch, not a tithe so good as that grand one at Orange—for it was long built into the bishop's palace, and served as his kitchen—but recording in its bas-reliefs, as the Orange arch does, some forgotten Roman victory over invading barbarians. When you go to Carpentras, mind you see the cathedral, part dating from the tenth century, and Constantine's bridle-bit, made out of a nail of the true Cross; but be sure, too, and see the Truffle stores. Here what are not sent out fresh are preserved, either in tins or in bottles, for the sake of those who like to see what they buy. The quantity sent to Russia and America is enormous. All sorts of plans have have been used for keeping them. You may have them in oil, in sugar, in brine, in vinegar. But eat them fresh if you have the chance; no preserved Truffles, least of all the dried things one sometimes sees, give more than the faintest idea of their true flavour. You feel sure, as you eat a Périgord-pie, that the Romans could not have known the real Truffle, or they would never have dreamt of spoiling it by dressing it with Garum, Asafœtida, and Rue.

Planting for Truffles.

Truffles have made many a Provençal peasant rich since Joseph Talon, of the village of Les Talons, in Vaucluse, discovered some seventy years ago that if you want Truffles you must sow Acorns. He began life as a poor Truffle-hunter (rabassier), and somehow got into the habit of dropping in an Acorn wherever he took out a tuber. Finding the crop increase, he took to planting, and used to show with pride the little field in which his oldest Oaks were growing. "Ei d'aqui que sieon vengu au mounde" ("That's how I got up in the world") he would say. His son sends some twenty pounds a week to Apt market. What makes Talon's discovery such a blessing, is that want of wood was rapidly turning the whole country into a desert. Since the Revolution, everybody had cut down as much as he pleased, and planted as little. The consequence is that hill-sides which used to have good Grass, are now torn and seamed, and all the earth washed down from them by the floods of rain to which the forests used to act as a sponge. Vaucluse and its valley, and Petrarch's forest and garden, were become an oasis in the desert. The peasant hated trees, and shirked all edicts about re-planting; all he cared for was to secure right of common for his carabros, the goats that give him milk and cheese. But now that he finds money is to be made by what trees bring with them—now that he sees a patch of poor gravelly soil bought for twenty pounds, bringing in after five years a yearly income of sixty pounds—he takes quite kindly to planting. The vine-disease, too, helped on the planting of Truffle-grounds. Many an acre of stony hill-side, where the phylloxera had killed out the Vines, is now covered with dwarf Oaks, at whose roots Truffle-hunting goes on every winter. If you go up Mont Ventoux, you will pass a deal of poor starved Rye, which certainly is not worth, straw and all, £3 per acre—and this has to be halved between the owner and his tenant; you then come to slopes on which nothing grows but Wild Thyme, and Lavender, and Everlasting Flowers. But somehow it will all carry dwarf Oaks; and in time, since the taste for Truffles is not likely to die out, all these Garrigues and Galluches, as they are called, will be planted with profit to posterity, who will have the timber, as well as to the Truffle-hunters. Moreover, the climate will be improved and the floods will be less frequent and destructive. No wonder the peasant mind is going in for Truffle-grounds, when the savoury tuber brings in yearly nearly 4,000,000 francs to the little Department of Vaucluse alone. Hence, though gourmandise is not a virtue, and Truffle-selling does give rise to a deal of higgling and deception—though, moreover, Truffle-poaching is the cause of no end of quarrels (peasants set up little watch-boxes in their fields, and go about on wet nights with dark lanterns)—we may consider the Truffle a boon to the human race, and may reckon Joseph Talon among the benefactors of his species.—"All the Year Round."

Large Asparagus.—The finest Asparagus which I have ever seen has been exhibited from time to time during the present season in Mr. Savage's shop, Park Side, Knightsbridge. Observing on the 1st inst. a very fine bundle I asked to have it weighed and counted, when I found that the sixty-two heads composing the bundle weighed 14 lb. 4 oz. Probably there have been larger and heavier samples recorded, and if so, I should much like to know of them, and where they were grown.—Strigulia.

The best Broccoli.—Of these, Mr. Gilbert, of Burghley, has given a list in the last April number of The Garden. Allow me to recommend one sort more, viz.—Carter's Summer Broccoli. We are still eating it (June 7), and shall probably continue to do so for a week longer. Many of them have produced enormous heads; one brought in to-day weighed nearly 6 lb. They were sown last year about the middle of May, and I dare say even now it would not be too late to sow them.—B. S.

SOCIETIES AND EXHIBITIONS.

MANCHESTER HORTICULTURAL SOCIETY.

June 2 to 9.

The remark so often made by those who describe horticultural exhibitions, that "the last was the best ever held," may, for the present, be dispensed with, not only as regards metropolitan gatherings, but also most of the leading provincial ones; for, unless where there is a disposition to give undue colour to the picture, there is no disguising the fact that most of the exhibitions held at the present day are a long way inferior to those that have been seen in times gone past. That such should be the fact, so far as regards the London shows, is not to be wondered at, but we are compelled to say that this year's Manchester Exhibition, however effective as a whole, was, in individual excellence, with few exceptions, far inferior to others that have preceded it.

Orchids.—Dr. Ainsworth, Higher Broughton, showed the best sixteen plants. Conspicuous amongst them were Saccolabium guttatum, a magnificent example bearing three spikes, fresh and beautiful; Vanda suavis, with six good spikes, and flowers large and finely marked; Cattleya Mendelli, bearing six spikes; Aerides crispum, extremely fine, one of the very best, and highly fragrant of all Orchids. Good plants of Dendrobium Wardianum and Phalænopsis Luddemanniana, the latter with fourteen spikes, and flowers unusually well coloured. Mr. J. Broom, Didsbury, who was second, had a large and finely-bloomed Epidendrum prismatocarpum, a very large Cypripedium barbatum, Aerides Dayanum, a brilliantly-coloured Masdevallia Harryana, and a large potful of Cypripedium spectabile, bearing sixteen spikes. In the class of ten Orchids, Dr. Ainsworth, who was first, had even finer plants than those in his other group. There was a splendid example of Veitch's variety of Vanda suavis, bearing eleven large spikes, the plant being dwarf, and covered with healthy foliage down to the bottom. Associated with this were Cattleya Warneri, with fifteen finely-coloured, large flowers; the old but beautiful Odontoglossum citrosmum roseum, bearing a dozen large drooping panicles of delicately-coloured blooms; and Aerides Fieldingi, having two branched spikes each 2 ft. in length. Mr. Fildes, who was second, had a beautiful example of Dendrobium Schröderi, the highly-coloured Lælia Brysiana, and a magnificent variety of Cattleya Mossiæ. For six Orchids Mrs. Leigh, Staleybridge, was first. Among other plants, she had a large and finely-grown example of Aerides Dayanum, bearing ten large spikes. Mr. Broom, who was second, had one of the finest specimens in the show, an Aerides Lobbii, bearing half-a-dozen splendidly-developed drooping spikes. In the nurserymen's class for Orchids, Mr. B. S. Williams was first in the principal class; he had the beautiful old Epidendrum vitellinum majus, Cypripedium niveum, Odontoglossum nævium majus, and the scarce Oncidium phymatochilum. Mr. R. S. Yates, whose plants were larger, was second; his finest examples were Aerides Fieldingi, Lælia Brysiana and L. purpurata, Odontoglossum citrosmum. In the class for ten Orchids Mr. Yates was first, and also with a single specimen.

Flowering and Fine-foliaged Plants.—Mr. T. M. Shuttleworth, Howick House, Preston, was first in this class; his group, which occupied the whole end of the spacious Exhibition building, was very effective. Conspicuous amongst the blooming plants were a moderate-sized but beautifully-flowered Aphelexis macrantha rosea, Pimelea mirabilis, large and fresh; Statice profusa, in fine condition; a highly-coloured Bougainvillea; a profusely flowered Dendrobium nobile; and a fine example of Anthurium Scherzerianum, bearing forty large expanded flowers, and having numbers of others to open. Among the fine-foliaged subjects, he had two immense plants of Gleicheni Speluncæ and rupestris; the handsome stately Cycas circinalis, and Croton undulatum, highly coloured. Mr. E. Pilgrim, Cheltenham, was second; among his flowering plants, which were especially fresh and bright, were Franciscea calycina, very highly coloured; a deeply coloured Hedaroma tulipifera, covered with healthy foliage and flowers down to the pot, a condition about which exhibitors now-a-days do not appear to be over-particular. A large and well-bloomed Acrophyllum venosum and Clerodendron Balfourii, a complete sheet of red and white. In the same group were also a couple of Palms in beautiful condition, viz., Geonoma Seemanni and Cocos Weddelliana. Mr. H. Samson, Bowden, who was third, showed the best examples of Allamanda grandiflora, Ixora coccinea, and Dipladenia amabilis in the exhibition; among his fine-foliaged plants was one of the best specimens of Alocasia Lowii we have ever seen. Eight stove and greenhouse plants in flower were shown by Mr. J. Rylands, Longford Hall, who was first; among his plants were a beautiful Aphelexis macrantha rosea (Chilman's variety), the finest amongst all the Everlastings; the glowing Azalea Conqueror, and Pimelea spectabilis and Hendersoni. Mr. W. S. Schloss, who was second, had the best Azalea in the show, as well as good plants of Ixora amboynensis and Franciscea confertiflora. Mr. T. M. Shuttleworth, who was third, showed, amongst others, the intensely coloured Dipladenia Brearleyana, not fully open.

Azaleas.—Here, as in most other places at the present time, Azaleas were indifferent. People used to find fault with them for being masses of flower without any belief in the shape of foliage, but now they do not possess very much of either. In the amateurs' class for six Mr. J. H. T. Broadhurst, Prestwich, was the only exhibitor; and among nurserymen Messrs. T. Lazenby and Sons, York, were also the only exhibitors. For twenty small Azaleas, Messrs. G. & W. Yates received a second award.

Ferns.—Mr. T. M. Shuttleworth had undoubtedly the finest and best grown collection of plants in the exhibition; they consisted of Dicksonia antarctica, Cyathea medullaris, C. princeps, and C. dealbata; Gleichenia flabellata, G. Mendelli, and G. semivestita; Davallia elegans, and Leucostegia immersa. Mr. E. G. Wrigley, Bury, who was second, had a smaller but very beautiful group. For six Adiantums, Mr. Shuttleworth was first with a faultless collection. Mrs. Leech second.

Fine-foliaged Plants.—These were largely shown in the amateurs' class. Mr. Rylands, who was first in groups of eight, had a grand plant of Dicksonia antarctica, also Livistona altissima, and Croton angustifolium altissimum and C. angustifolium in good condition. Mr. T. H. Bailey, who was second, had a somewhat uneven collection; Mrs. Leech was third. Mr. W. A. Schloss was also awarded a third prize for a group unmistakably equal to any shown in the class. In the nurserymen's class of ten plants Mr. Cypher, Cheltenham, was first with large and well-grown plants, among which were several unusually good Palms and Crotons; Messrs. W. J. Caldwell & Sons were second.

New and Rare Plants.—Among exhibitors of these Mr. B. S. Williams and Messrs. Rollisson were first and second in the order in which their names stand.

Miscellaneous Subjects.—Mr. R. S. Yates was awarded a prize for a collection of Amaryllids, a similar position being assigned to Dr. Ainsworth in the amateurs' class. For ten Dracænas, Messrs. Rollisson were first, Mr. J. Broome and Mr. R. S. Yates, being equal, second. In the amateurs' class for Dracænas, Mr. J. Mort, Bowden, was first, with an even well-grown half-dozen, and Mr. S. Hodgkinson second. Of Gloxinias there was an unusually fine display. Mr. W. Slater was first with some seedlings, bearing very large erect flowers, and having stout short leaves, in short, grown as they ought to be, but in a way too seldom seen; Mr. Forshaw was second. Messrs. Paul & Son were the only exhibitors of Roses in pots, but they well deserved the first prize, which was awarded them; their plants though not large were, without exception, models of skilful cultivation, and covered with a profusion of fine flowers and ample foliage. The same exhibitors were also first for cut blooms. Lilium auratum was shown by Mr. Fildes, who had large well-flowered examples, and by Mr. J. Heywood, whose plants were not fully in bloom. Pelargoniums were produced in quantities and in fine condition; they consisted of show, fancy, zonal, and variegated varieties. Mr. Rylaude was first in all the nurserymen's classes of flowering kinds, his plants being, as they usually are, large and beautifully flowered. Messrs. T. Lazenby & Sons were second in the show and zonal class with well-managed collections. In the amateurs' class for six show kinds, Mr. H. G. Leppoc, Higher Broughton, was first. For six Zonals Miss Ashton took the first with a really finely-managed group, sufficiently, but not over-tied, the flowers being kept erect, to the full length of the stalks, and not pinned down in the objectionable manner often resorted to. Mr. T. M. Shuttleworth, who was second, showed very large plants. On the amateurs' class for twelve hardy Ferns, the competition was very close. Mr. Shuttleworth just won by the more than usual excellence of his Polypodium elegantissimum and Asplenium marinum. Mr. Crowe, whose plants were larger and in splendid condition, was second. In the nurserymen's class for twelve kinds Mr. Rylands was first with a faultless group, well varied, a point not always enough attended to as regards these plants. Mr. R. S. Yates was awarded first prize for Rhododendrons; they occupied the extreme end of a long tent, and had a very fine effect. Messrs. Lane were second, and Messrs. G. and W. Yates third. Of Alpine and herbaceous plants Messrs. Rollisson, as usual, had the best group, which consisted of plants well varied, both in form and colour. Of Heaths the best came from Mr. Cypher, who showed, amongst others, one of the most profusely bloomed examples of the delicate coloured Erica florida that has been seen for years, also E. ventricosa coccinea minor, and E. Cavendishiana, both good. Mr. J. Rylands received an extra prize for a neat half-dozen of small healthy plants. Mr. Cypher was awarded an extra prize for a beautiful group of stove and greenhouse plants in bloom, among which were some of the best flowered examples exhibited, especially some specimens of Hedaroma tulipifera and fuchsioides. Mr. Stevenson received a like award for a similar collection, and Messrs. W. & J. Birkenhead, Sale, had an extensive and varied collection of Ferns. Messrs. W. J. Caldwell & Sons showed half-a-dozen plants of the beautiful Yucca filamentosa variegata, and an unusually large and beautifully-grown pair of Standard Bays, not less than 10 ft. high and with heads almost as much through, green and healthy in foliage. Mr. Shuttleworth had a grand pair of Tree Ferns, consisting of the rare Cyathea Burkei and Dregei; Mr. Williams had a pair of greenhouse Palms. Mr. Mort showed tricolor Pelargoniums extraordinarily large and covered with clean healthy foliage. Messrs. Standish & Co. had a beautiful group of Acers and other fine-leaved plants in splendid condition; Mr. R. Smith, Worcester, showed also a similar collection, remarkable for variety and beauty of arrangement; these two groups each occupied a half-circular bed flanking the entrance to the exhibition building, and were as effective as they were interesting. Messrs. Lane furnished ten Ivies in pots, in much better condition than that in which these plants are generally shown. Cut flowers of stove and greenhouse plants, which were shown in boxes similar to Roses, and the bouquets constituted an important feature. In the nurserymen's class Messrs. Cole were, as usual, first, with such a collection as even they have rarely, if ever, equalled, including enormous bunches of Ixoras, Heaths, Vandas, Aerides, Oncids, the singular Strelitzia regina, and Nymphæa dentata and Devoniana. Mr. Cypher was second with a beautiful boxful, and Messrs. Caldwell & Sons third. In the amateurs' class Mr. Shuttleworth was first; Mr. G. Smith second, and Mr. G. W. Binns third. Bouquets were shown by nurserymen in threes for balls and weddings; about three dozen were shown, and there was not an inferior one amongst them. Messrs. Turner Brothers, of Liverpool, were first in both, with as perfect arrangements of chaste and beautiful flowers as it is possible to conceive; Mr. G. B. Todd, Heaton Norris, was second in both classes, and Mr. Cypher third. In the amateurs' class for one bouquet, the Rev. T. France, Heyhurst, was first, Mrs. Marsland second, and Mr. J. G. Adams third. Mr. Fildes showed a group of Sarracenia, and the singular Darlingtonia californica, highly coloured and otherwise in most beautiful condition.

Fruit.—Of this there was not much, but that which was shown was good. For a collection Lord Bagot was first with Black Hamburgh and Duke of Buccleuch Grapes, Smooth Cayenne Pine, Violette Hâtive Peaches, Downton Nectarines, Keen's Australian Strawberries, a Melon, Figs, and a dish of Apples. Lord Delamere was second with Hamburgh Grapes, Royal George and Early York Peaches, Elruge Nectarines, Eastnor Castle, Gilbert's Victory of Bath and Queen Emma Melons, and President Strawberries. For Black Grapes the Earl of Crawford and Balcarras was first with two such bunches of Black Hamburghs as are seldom produced at this time of the year; the berries were well coloured, large hammered, and in every way excellent. Lord Delamere was second, and Mr. J. Rylands third. Among White Grapes Duke of Buccleuch, large in berry but green looking, was placed first; it was well finished considering the season; Muscats of Alexandria were second. The former was shown by Lord Crawford, the latter by Mr. W. Blinkhorn. Strawberries in pots came from Mr. E. Lever, who was first; and Mr. Rylands, who was second, both exhibitions being good.

ROYAL HORTICULTURAL SOCIETY.

JUNE 7 AND 8.

THIS exhibition, which was very effective and well arranged, took place in a large tent on the lawn. Among the more noteworthy objects were some magnificent specimens of Odontoglossum vexillarium, sent from Baron Rothschild's garden at Gunnersbury, and Messrs. Veitch & Sons, furnished (not for competition) a very choice group of rare plants. Mr. Bull showed fine-foliaged and new and rare plants in excellent condition. Mr. Turner and Messrs. Paul & Son contributed Roses in pots and also cut blooms of Roses in good condition. Mr. Wills had new seedlings of Dracænas, well selected and handsome kinds. Show Pelargoniums came from Mr. Turner, and Mr. Watson had a good group of fancy kinds. Fruit was not well represented, but, upon the whole, the exhibition was superior to any display of the kind that has taken place here for some years past.

First Class Certificates.—These were awarded to the following new and rare plants:—

Mimulus moschatus Harrisoni (Harrison & Sons, Leicester).—This is a strong-growing hybrid, the parents of which are the common Musk (Mimulus moschatus) and the large-flowered Mimulus maculatus. Its foliage, which is of a bright healthy green, is large, like that of the spotted Mimulus, and has a delicate perfume, like that of Musk. The plant is most floriferous, the flowers being an inch in diameter, and clear yellow spotted with brown. It is a really first-class decorative plant.

Clematis Enchantress (Cripps & Son, Tunbridge Wells).—A large and distinct variety, good in habit, and bearing double white flowers, some of the petals of which are flushed in the centre with delicate rose. It promises to be a useful decorative plant.

C. Venus Victrix (Cripps & Son).—Another semi-double Clematis, but in this case with better shaped flowers, the sepals, which are broad, being of a delicate lilac colour.

C. Duke of Connaught (Jackman).—This, which, like the last, has large double lilac flowers of good form, will be equally useful as a decorative plant.

Croton Mooreanum (Veitch & Sons).—A strong-growing variety, having broad strap-shaped leaves, from 10 in. to 12 in. in length, and profusely mottled and netted with bright golden markings on a dark green ground. It somewhat resembles C. Weismanni in habit, and well deserves culture as a fine-foliaged stove shrub.

Gloxinia Excelsior (Veitch).—A strong-habited seedling, which may be taken as representing a new race or strain of robust and floriferous varieties, the prominent colours of which are rose, crimson, and purple.

Habrothamnus Newelli (Newell).—A seedling Habrothamnus, somewhat like the well-known H. fasciculatus, but having larger and brighter crimson flowers, borne in dense terminal clusters. As a conservatory or greenhouse climber it well deserves attention.

Echinocactus cylindricus (Croucher).—A distinct and interesting species, chiefly remarkable for a profusion of spines, which form a perfect *chevaux de frise* around the cylindrical-fluted stem, the largest being 3 in. or 4 in. in length, and strongly hooked at the apex. It is a rare plant, and one well worth culture.

Hybrid Ivy-leaf Pelargonium, Gem (George).—This is a hybrid between the common Ivy-leaf Pelargonium and some form of P. zonale. It may, perhaps, be best described as a shrubby Ivy-leaf variety, the flowers of which are well formed and of a silvery-lilac colour, the top petals having a rosy spot. Of this variety several plants were shown, and it well deserves culture as a beautiful decorative kind well suited for pot culture.

Microlepia anthriscifolia (Backhouse).—A dwarf-growing, finely-cut Fern, bearing triangular fronds from 3 in. to 6 in. in height. these being produced at intervals along a slender, creeping rhizome, Grown in a shallow pan of peaty compost and sandstone it forms a fresh-looking, attractive object, and is a welcome addition to exotic Ferns.

Orchids.—Conspicuous amongst these were the plants of Odontoglossum vexillarium, from Gunnersbury, to which allusion is made above, one of them, a delicately-coloured variety, bore forty-two flowers on six spikes; the other a vivid rosy form with larger blossoms, bore thirty-six brilliant flowers on four of the finest spikes we have hitherto seen produced by this plant. Both specimens were in the best possible condition; with these came a white-flowered Cattleya in the way of C. Wagneri. Mr. B. S. Williams showed a specimen of the hardy North American Cypripedium spectabile—one of the most beautiful of all Lady's Slippers—bearing sixteen flowers; also large masses of Cypripedium barbatum and the rare C. superbiens, the latter bearing nine flowers. Masdevallias, which are becoming very popular at present, were represented by many varieties of M. Harryana, M. Lindeni, and several other less conspicuous species. Mr. Hepburn, of Sidcup Place, furnished a good plant of the large-flowered Phalænopsis and a noble example of Sobralia macrantha, bearing nearly a dozen flowers. In the same group were also a well-grown Oncidium macranthum, bearing a long flexuose spike of golden-petaled flowers, each measuring fully 3 in. across; and a well-flowered example of the delicate, musk-scented Dendrobium Devonianum, bearing six spikes of white, purple-tipped flowers. Mr. Ward had a splendid specimen of D. Falconeri, bearing from 100 to 150 white, crimson, and gold-coloured flowers; also a good Odontoglossum vexillarium, with four strong spikes. Messrs. Veitch & Sons had several distinct forms of O. Alexandræ, O. Pescatorei, and O. vexillarium; likewise Dendrobium crystallinum, with golden-lipped, crimson-tipped blossoms, and the large, milk-white D. infundibulum; also a strong specimen of the graceful D. Wardianum, bearing delicate, wax-like, white, yellow, and purple-tipped flowers, 3 in. across. Cattleyas were represented by many forms of the chaste C. Mendelli, and the rosy lilac-purple-lipped C. Warneri, and Lælia purpurata. Messrs. Veitch sent a splendid specimen of Masdevallia Veitchi, bearing four fine, rich, orange-purple-shot flowers.

New Flowering and Fine-foliaged Plants.—Mr. Bull sent half-a-dozen plants never before exhibited in England; these were Dipladenia Regina, a pale peach or rosy-flowered kind; Maranta Massangeana, having dark velvety, oblong leaves, delicately veined with grey; Zamia princeps, a graceful pinnate Cycad, with spinose petioles; Croton Rex, a slender variety, having twisted, bronzy green foliage, spotted and veined with crimson and gold; Dieffenbachia Shuttleworthi, a green-leaved species, having a silvery band down the centre of each leaf; and Keratakidogamia Hilli, a very dark green, pinnate-leaved Cycad, well adapted for contrasting with its lighter-tinted allies. In the class for twelve new plants, Mr. Bull was again first with the vivid crimson Dipladenia Brearleyana; Pritchardia grandis, one of the most noble of all Fern-leaved Palms; Croton trilobum, with hastate, golden-blotched foliage; Bertolonia Van Houttei, with velvety-green, ruby-spotted foliage; Aralia splendidissima, a distinct and noble-habited species from New Caledonia; Croton spirale, and C. majesticum; Blandfordia princeps, a grassy-leaved plant, with bell-shaped, scarlet, and yellow flowers; Sadleria cyatheoides, a distinct and effective tree Fern well worth culture; other plants in this group were the purple-leaved Artocarpus Cannoni, Dracæna Goldieana, and Kentia Moorei, one of the darkest and most distinct of all pinnate-leaved Palms. Mr. B. S. Williams had also a choice group, in which we noted a new Adiantum with reddish-tinted fronds, and Sarracenia Williamsi, which resembles S. flava, but has much larger mouths and hoods to its pichers. Mr. Williams had also the beautiful new Astrocaryum murmureum, a distinct fan-leaved Palm, the under sides of the leaves of which and the spinose petioles are of a silvery-colour; Croton Williamsi, a bright green-leaved form, splashed with creamy yellow, and others, including the delicate Adiantum gracillimum. Foliage plants were well represented, the first prize for twenty in 12-inch pots being awarded to Mr. W. Bull, who had splendidly grown Crotons, a good Adiantum gracillimum, Dracæna Goldieana, the silvery-veined Phyllotænium Lindeni, and several good Cycads. Mr. Wright, of Lee, Kent, was second with a smaller but well-grown group.

Groups shown for Mr. Bull's silver cups were but limited. Twelve cups were offered, and of these only four were competed for. In the nurserymen's classes Mr. Wright, of Lee, Kent, was first with Aralia elegantissima, Maranta leopardina, which has light green leaves with darker markings; the dark, purple-leaved Artocarpus, and other foliage plants. Mr. B. S. Williams was second; his best plant was a fresh and healthy example of Todea intermedia. Mr. Legg, gardener to Mr. S. Ralli, was first in the amateurs' class with Martinezia granatensis and a splendid plant of Alpinia vittata. In the class for amateurs who have never before taken a prize, Mr. C. Rann, Handcross Park, Crawley, Sussex, was first with well-grown plants.

Miscellaneous Plants.—Messrs. Veitch & Sons sent a large and select group of new and rare Orchids, Crotons, Ferns, Aralias, Palms, Gloxinias, and other plants, the whole tastefully staged in the centre of the large tent, where they were much and deservedly admired. The new seedling Gloxinias, which fringed the edge of this group, were very distinct and effective, both in flower and foliage. A great panful of cut flowers of the large spotted Iris (I. susiana) was much admired. The flowers shown had been plucked from beds in the open air, and were very fine, some of them measuring fully 7 in. across. From the same firm came a vigorous plant of the orange-scarlet Hæmanthus cinnabarinus, bearing a globular head of stellate flowers on a purplish scape, 12 in. or 14 in. in height, the foliage being oblong and of the freshest green colour imaginable. A panful of the new and distinct Boronia elatior was also very effective, its bright carmine, Heath-like flowers nestling among finely-cut, dark green leaves. In this group, too, were several distinct and beautiful hybrid tuberous-rooted Begonias in brilliant condition. Among them were B. excelsior, B. Vesuvius, and B. Sedeni, all distinct and effective kinds. Mr. Maurice Young furnished a large and attractive group of Conifers, purple-flowered Clematises, and green-leaved scarlet-berried Aucubas, cut-leaved Japanese Acers, and variegated Aralias. Mr. B. S. Williams had also a large miscellaneous and well-arranged group, consisting of Palms, Ferns, and flowering plants in excellent condition. Mr. J. Wills showed a group of miscellaneous decorative plants, among which were several distinct tuberous-rooted Begonias, with scarlet flowers, one named Dr. Masters having vivid crimson blossoms. This group was tastefully fringed with common Moneywort. Messrs. Veitch & Sons sent a varied group of cut-leaved Japanese Maples, some green, others bronzy purple, all varieties of Acer dissectum; these had as an edging a double row of the little Violet Cress (Ionopsidium acaule). Mr. Turner exhibited a noble group of variegated and green-leaved Ivies, conical or spindle-shaped plants, in excellent condition. Mr. R. Parker showed a group of hardy flowers, among which were cut blooms of Irises of various colours, purple, blue, lilac, yellow, sulphur, and brown; also crimson-rose and flesh-tinted forms of Pyrethrum rubrum, backed up by hardy Ferns, Funkias, and other fine-foliaged plants. Of plants arranged for effect, Mr. Wills had the best group; Mr. Aldous also showed in this class, but his plants were too crowded. Among miscellaneous hardy plants the most strikingly conspicuous were some well-grown examples of Saxifraga (Cotyledon) nepalensis from Mr. Kinghorn; these formed pyramids of white star-like flowers, fully 2 ft. in height. Mr. G. F. Wilson sent a fine plant (fully 6 ft. in height) of the new Lilium Hansoni, bearing terminal spires of golden-yellow flowers of great substance. This plant is quite distinct from L. avenaceum, with which it is sometimes confounded in gardens. Several large and effective stands of Ixias, Sparaxis, and Irids of various kinds came from Messrs. Hooper & Co. Cut Roses were furnished by Mr. Turner and Messrs. Paul & Son; and in the classes for amateurs Mr. Chard, gardener, Clarendon Park, Salisbury, had several attractive stands of mixed varieties, and filled entirely with Maréchal Niel—glorious blooms both as regards size and fragrance.

Fruit and Vegetables.—Grapes were represented by good clusters of Black Hamburgh, the best being those from the Earl of Portsmouth's gardens, at Hurstbourne Park, Hants. Mr. Spottiswoode, Coombe Bank, Sevenoaks, had the best Black Prince, and Mr. Douglas furnished excellent clusters of Muscats and Buckland's Sweetwater; and also some good Strawberries. Mr. Blythe, Woolhampton, sent fruit of the Japanese Medlar in excellent condition. Melons were well represented, the first prizes being awarded to Read's Scarlet-fleshed Hybrid, and in the green-fleshed class to Gilbert's Victory of Bath. Mr. Miles showed a splendid boxful of a large, smooth, globular Tomato, named the Stamfordian. Pines were below mediocrity. Of Cherries, Mr. Miles had excellent dishes of Black Circassian, and also some good Figs. To Mr. Pragnell was awarded Messrs. Carter & Co.'s prize, offered for four dishes of new Peas, viz., Premium Gem, Carter's Extra Early, and First Crop. The same exhibitor also obtained Messrs. Sutton's Prizes for Peas with William I., Sutton's Emerald Gem, Sutton's Bijou Dwarf-wrinkled, and Sutton's Ringleader.

A list of the prizes awarded on this occasion will be found in our advertising columns.

CENTRAL HORTICULTURAL SOCIETY OF FRANCE.

Paris, May 29.

The first great exhibition of flowers and plants for this year, held under the auspices of the Société Centrale d'Horticulture de France, took place last week in the Palais de l'Industrie, in the Champs Elysées. The exhibition occupied the whole of the ground floor of the building, and sculpture belonging to the Exhibition of the Salon (or French Academy of the Fine Arts) being distributed among the masses of plants and flowers, the effect was all that could be desired. Horticulturally, the exhibition presented many points of special interest which I shall now proceed to mention briefly. The collection of Gloxinias exhibited by Mons. J. Vallerand, of Asnières, near Paris, was by far the most varied and beautiful I have ever seen at any show, and were remarkable as much for the beauty, great variety, and distinctness of their colourings and markings as for their culture and the excellent condition in which they were shown. In the course of the morning the two most beautiful of the unnamed seedling varieties were selected by and named after the present president of the Society and his wife, Duc and Duchesse Décazes, the duke being the present Minister for Foreign Affairs in France, and having succeeded to the presidency of the Society on the death of the eminent botanist, Professor Adolfe Brongniart, at the end of last year. To this collection of Gloxinias was most deservedly awarded by the jury the special gold medal of honour placed at the disposal of the Society by the Municipality of the City of Paris. The other principal prizes, consisting first of two handsome pieces of china of Sèvres manufacture, were awarded respectively to Messrs. Savoy and Chantin, as winners of the greatest number of gold medals at this exhibition. The two special gold medals given by the Minister of Agriculture were awarded to Mr. Charles Pfersdorff, of Paris and London, for a splendid and beautifully-grown collection of extremely curious and interesting varieties of Cactus, Echinocactus, and allied species; and to Messrs. Vilmorin, Andrieux, & Co., of Paris, for a very interesting general collection of flowering and foliage plants. The special medal, given by the Prefect of the Seine, was awarded to Messrs. Croux & Fils for an interesting collection of plants. The medal presented by the lady-patronesses of the Society was awarded to Mons. Touzet for an exceedingly interesting and well-grown collection of Bromeliads, so seldom seen in perfection at our London shows. The gold medal, founded by the Society in memory of one of its former presidents, the late Marshal Vaillant, and an extra large gold medal, were also awarded to Messrs. Leveque and Margottin for two large collections of tall standard Roses in pots, which were considered of equal merit, the one for culture, the other for the varieties contained in it, but neither of which would, I think, have been noticed at all at one of our London shows, where we are accustomed to such splendid specimens of culture in the form of pot Roses, with which these tall, poorly-flowered plants would not for a moment bear comparison. An interesting small collection of new succulents was shown by Mr. Pfersdorff, consisting of a most distinct and beautifully white variegated form of Plectranthus atropurpureus, three new species of Echinocactus, named respectively E. cylindricus, E. Engelmanni, and E. Engelmanni albo-spinus; these were awarded a second-class medal by the jury. Neither Calceolarias nor Cinerarias were at all equal, either in brilliancy of colours or size of flowers to what we are accustomed to see at our London shows from Messrs. Dobson, of Isleworth, and others. A very fine collection of herbaceous plants in pots was also shown in excellent condition, the only novelty among them being one named Venidium calendulaceum quite unknown to me, with glaucous woolly foliage, and flowers and habit resembling one of the Gazanias. The flowers seemed to be produced most abundantly, and were of a bright golden colour, well raised above the foliage on tall footstalks, and without any dark centre eye, altogether a most distinct and ornamental plant for the herbaceous border. I have since learned that this plant is an annual easily raised from seed. New herbaceous and annual plants were represented by Silene compacta nana, and a so-called white variety of the same plant of really dull blush-coloured flowers and of inferior merit: an exceedingly distinct and pretty pure white form of the well-known lilac-flowering annual Fenzlia dianthiflora, and by Phlox Drummondi grandiflora, a finely coloured and large-flowered variety of this well-known species, said to come quite true from seed. One of the most interesting features of the Exhibition to lovers of trees and shrubs was a fine collection of no less than eighty varieties of Oak in small well-grown specimens in pots sent (but not for competition) by the Secretary-general of the Society, Mons. Alphonse Lavallée, from his unequalled collection at the Château de Segrez, near Breuillet, at the catalogue of which he has been working for more than ten years, and hopes to get it published before the end of this year, embracing, as it will, over 2470 varieties of hardy and ornamental shrubs, and 2210 varieties of trees, all grown on an area of not more than 75 acres in extent; this catalogue being, of its kind, quite unique, should be an immense acquisition to all lovers of hardy trees and shrubs. Unnamed seedling Pansies were exceedingly well shown by three exhibitors, grown in pots, but plunged in tastefully-arranged beds in a shady corner, where they had an extremely pleasing effect, presenting all the appearance of being actually growing in the beds, and showing an abundance of handsome, richly-coloured, and finely-formed flowers. A new seedling Acanthus, with handsome, deep green, shining foliage deeply ribbed (likely to be useful for sub-tropical beds, with a carpet of Pyrethrum Golden Feather, or some such other bright-foliaged plant to show it off), was shown under the name of A. rigidus Teneiri, and was awarded a bronze medal by the jury. A new and distinct form of Yucca aloifolia variegata, with broad white bands down the centres of the leaves and a glaucous outside margin, and as yet unnamed, was awarded a silver medal by the jury. Mons. Lemoine, from Nancy, brought up a small collection of his fine, new, tuberous-rooted Begonias, many of them with double flowers, but they were, unfortunately, much injured and shaken in the long train journey from Nancy to Paris.

W. E. G.

The American Centennial Exhibition.—Among the English exhibits is a very fine collection of green and variegated Hollies, hybrid Rhododendrons (commonly called American plants), handsomely-formed standards and choice assorted varieties, some of which are quite new; fine specimen standard Portugal Laurels, and a superb collection of Japanese Coniferous plants, all exceedingly beautiful and rare. These are exhibited by the well-known firm of Messrs. Veitch & Sons, of Chelsea, and Coombe Wood Nurseries, London. Mr. Court (Messrs. Veitch's representative at the Centennial Exhibition), has been very successful in being able to bring Hollies to this country in such good condition, with all the foliage intact; indeed, all the plants are in fine condition, and form a striking group very artistically arranged. The exhibit made by Messrs. Veitch & Sons, and which is one of the rarest and most valuable collections in the entire Horticultural Department, has been presented by them to the United States Centennial Commission as a souvenir of the Exhibition. Among them are some varieties of Hollies, Rhododendrons, and Evergreens quite new to this country, and the collection will, doubtless, excite great interest among horticulturists. Correspondence, elsewhere published in this morning's "Ledger," shows that the valuable collection of trees and shrubs sent to the Centennial Exhibition by Messrs. Veitch, of London, has been presented to the Fairmount Park Commission. The donors gave to the British Centennial Commissioners authority to select any charitable or educational institution on which to bestow this gift, and Colonel Sandford and Professor Archer, with excellent judgment, selected the Fairmount Park Commission. So this valuable collection of plants will remain with us to be enjoyed hereafter, as it is now, as one of the permanent adornments of the Park.—"Philadelphia Ledger."

Died, June 5, at the Rectory, Woodstock, Oxon, aged eighty, the Rev. George William St. John, M.A., Rector of Bladon-cum-Woodstock.

No. 239.] SATURDAY, JUNE 17, 1876. [Vol. IX.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

JUNE FLOWERS IN THE NORTH.

At this season, more than at any other, is the difference remarkable between gardens devoted to bedding out and those in which hardy flowers and flowering shrubs hold the chief place. It is indeed a poor art that cannot show a wealth of beauty now in this month of flowers; and even though many people are absent from their gardens at this season, yet should their gardens be made beautiful for the enjoyment of those who do remain in the country. It is now that the newly-planted Geraniums and Calceolarias look most meagre and unsatisfying, yet it is now that hardy flowers are in the very height of luxuriance, and it is now that their true lover will busy himself noting the characteristics of his favourites, and devising new schemes for coming summers. Here, in the north, we are under the influence of the most backward spring and early summer that has been known for years. Roses, which should ere this have become tolerably numerous, have hardly appeared, not at all indeed, except on sheltered walls. Moreover, the late winter was a most trying one to all vegetation. A mild open midwinter was avenged by bitter winds and severe frosts throughout the spring, with disastrous effects upon hardy plants, which had been forced on by the open weather. It is only now that we can realise the damage done as shown by the many blanks in the herbaceous borders. Among those which have wholly or in part disappeared from mine may be noted—Dracocephalum grandiflorum, in which there is not a sign of life; Funkia grandiflora, generally hardy, is in the same condition; of Arum crinitum, a favourite horror of mine, only two or three plants remain; Aquilegia cœrulea, nearly all dead, and so is Primula cortusoides. Not so its very superior relative Primula Veitchi (generally labelled P. cortusoides amœna, a clumsy pseudonym), which spreads fast, and is perfectly hardy; P. japonica is also none the worse, and is a really fine hardy plant—we may hope for more variety in colour in this species ere long; Clianthus puniceus is killed to the ground, and is recovering slowly; Narcissus Bulbocodium has disappeared, but I fancy it is always difficult to keep. Among Roses the only loss has been La France; Captain Christie, which was reputed tender, has stood well. There are many blanks in the beds of Carnations and Pinks. Of those subjects which are considered tender, but which have not suffered, may be named the Lemon-scented Verbena, common Myrtle, Desfontainea spinosa, Crinum capense, Convolvulus Cneorum, and Androsace lanuginosa; the last of the Narcissi, the beautiful double Pheasant's Eye, is now in profuse beauty in the woods here. This family has been in ever-changing beauty since the first Daffodils "took the winds of March with beauty," but this double Pheasant's Eye is the only one of the family which is not spoilt by doubling: even in this, the single form is more truly beautiful. There is much interest at present in a well-disposed rock-garden. Of the many Saxifrages now in bloom, none is so purely white or so graceful as one which I obtained from Dr. Lowe (whose fine collection at Balgreen, near Edinburgh, is now dispersed), under the name of S. geranoides. It belongs to the palmate-leaved group, and has graceful panicles of flowers, with a corolla shaped like that of a Saponaria. Another good species I got in the same place under the name of S. hispanica, a very dwarf London Pride, with reniform-crenate leaves. The bloom is profuse, and at a little distance off has a pleasing rosy tint. Sedum ebracteatum makes a fine turf of buffy-white, and overhanging it in fine contrast is the scarlet Delphinium nudicaule. Erinus alpinus is a sheet of soft rose, E. hispanicus, a deeper hue, both harmonising well with a ground of Sedum glaucum. Aubrietia grandiflora begins earlier and lasts later than any other kind known to me; it is still a mass of soft lavender. When a rockwork is once well established, it requires some management to allow the plants to develop themselves properly. This should be done by removal, not by cutting in fine specimens, for the character and beauty of dwarf plants can only be seen when they are developed into large masses. Therefore, from time to time, new spurs and valleys should be added to a rock-work whither removals of entire specimens may be made from the more crowded parts. Primula farinosa is a plant which is too seldom seen, but which should have a nook allotted to itself alone, and a little peat and loam shaken over the tuft when the leaves decay in autumn. The most delicately beautiful plants in the mixed border just now are the various Columbines. Of these the most brilliant is Aquilegia truncata, at least so the seed from which it was raised was named by Mr. Thompson, of Ipswich. It is clear scarlet and yellow, and perfectly hardy. A. arctica is graceful, but a more bricky red, and the other is to be preferred. Aquilegia grandulosa, blue and white, and A. Whitnanni, deep blue, are very desirable, and A. cœrulea is more graceful, and pale blue, but difficult to keep. Aquilegia chrysantha is not yet out, but promises well, and likely to be vigorous and hardy. The purest blue flower out now is Myosotis Imperatrice Elizabeth, which is true ultramarine; it is quite hardy, though generally seen in conservatories. Of all bedding Violas my favourite is the clear sulphur Grievi, which makes a lovely contrast with Blue Perfection, but it should be planted in a bed which may remain undisturbed, as it is far better the second year than the first. I think Aquilegia truncata, mentioned above, must be a bright form of A. canadensis, as I fancy the true A. truncata is a late flowerer; this species forms a beautiful group with Czackia Liliastrum. Renealmia (Libertia) grandiflora, a fine plant, and good for cutting, is in flower now; it increases quickly. A semi-double Papaver bracteatum from Miss Hope, of Wardie, is very showy, and stands better than the common form. Lupines are now very showy for back lines. These are a few of the flowers to be specially noted with a view to next season. Salmoniceps.

A DEVON WILD GARDEN.

We have a bank here possessing great natural beauty; it consists principally of wild flowers, thinly shaded with trees. It lies between the pleasure grounds—which are amply furnished with choice Conifers, Rhododendrons, and Azaleas—and an extensive Deodar glen, in which there are several hundred specimens of that Conifer of various heights up to 40 ft. or 50 ft. On the right of a winding walk running from south to north on abruptly-rising ground, the principal flowers are growing chiefly under the trees; on the left is a beautiful foreground of extensive park-like scenery, the River Culm flowing within a mile, and the Exe two miles beyond that, while the Dartmoor Hills, 25 miles or 30 miles distant, break the horizon. From the time when Winter Aconites and Snowdrops were in bloom, we have had a continual succession of flowers, consisting of Crocuses, Daffodils (single and double)—of which quantities grow in the orchards in this neighbourhood—and Wood Anemones. These I planted many years ago by cartloads. I took them up when in flower, with large turves attached to them, from a wood, in wet ground, where they abound. We have also different sorts of Hyacinths, Orchis maculata, Primroses, Cowslips, Periwinkles, and the Gladwyn Iris; the bright red seeds of the latter are beautiful throughout the winter and spring, and some are even still left on the expanded seed-pods. The best effect is produced by immense quantities of wild Hyacinths or Blue Bells, and the wild Lychnis, in contrast with double-blossomed Furze and a large quantity of the yellow Doronicum austriacum, which grows and spreads very freely, the colours appearing much deeper under the shade of the trees than when exposed. These are nearly past, but Columbines and Foxgloves are now in flower, and Sweet Williams are coming into that condition: the last are allowed to ripen and drop their seeds. There are also irregular masses of indigenous Ferns, such as Lastrea Filix-mas, L. Filix-fœmina, L. dilatata, L. angularis, Scolopendriums, &c. Of shrubs there are common Hollies, Snowberries, Mahonias, Leycesteria, Pampas Grass; and near the walk, St. John's Wort; on the left of the walk, among other trees in groups and singly, are some very fine old Oaks and Elms, Cedars of Lebanon, Cedrus atlantica, and Thorns both white and coloured, the whole making a natural and beautiful display. To this bank much attention has been paid for more than twenty years; all our forced bulbs, such as Hyacinths, Tulips, Polyanthus Narcissus, N. poeticus, &c., having been annually planted there after being well ripened off; also large quantities of Snowdrops, Crocuses, and herbaceous plants. John Garland.

Killerton, Exeter.

CROTONS AND THEIR CULTIVATION.

Crotons undoubtedly rank amongst the handsomest and most useful of stove plants, and among the best of them must still be reckoned the old C. angustifolium. When fairly well grown and coloured, its drooping masses of fine foliage are strikingly beautiful. C. variegatum and C. pictum are also good, but they want the gracefulness of C. angustifolium. Among the new ones, C. Weismanni is perhaps the best, and we may also name C. interruptum as a contrast to it; both have fine leaves. As a vase plant, C. angustifolium is the most useful, and little plants of it in 4-in. pots are among the best of subjects for the dinner-table; I employ no plant that is more appreciated for this purpose, unless it be the handsome, drooping Dracæna Cooperi, which has not yet been surpassed by any of the new ones of its class. Crotons are not difficult to grow, but judicious care is required to bring them to perfection, a condition indicated by good and well-coloured foliage, be the leaves broad or long, according to the variety. C. angustifolium is subject to red spider, like the rest of its class, and when this pest gets the better of it, it destroys its good appearance. Much depends, therefore, on keeping it free from spider, while at the same time it should be grown in a tolerably high stove temperature, and fully exposed to the sun—conditions which rather encourage the enemy; but, on the other hand, too much shade spoils the plants by turning the foliage nearly green. The finest-coloured Crotons which I ever saw were grown in a hot Pine-pit, where they never were shaded at all; here, where the plants were otherwise well cared for, the foliage was simply magnificent.

As regards cultural treatment Crotons may be propagated by means of cuttings made of the young shoots. These strike readily in a stove temperature, if covered with a bell-glass and plunged in a bed where there is a little bottom-heat; but they will strike equally well, though not quite so soon, on a shelf in the stove, if the cutting pot be plunged in another a little larger, and the cavity round the sides be filled up with Moss or soil; one cutting in a 3-in. pot is sufficient. When well rooted, they should be shifted into a slightly larger size, and the pots should be well drained; but an inch of crocks, or less, will effect this, for it is a bad plan to fill the pot half or quarter full for such subjects, merely as a precaution, as some do. Scores of plants are ruined through being over-drained in a flower-pot. It should never be forgotten that the evaporation from the sides of the pot itself is almost sufficient to dry up a ball of soil in a day, unless the pot is a very large one. The compost which suits the Croton best is one composed of loam and peat, in equal quantities, with a good sprinkling of silver or good river sand, and some well-rotted cow-manure; but those who have not these materials may employ without the least hesitation common garden soil, put through a half-inch sieve, and mixed with fine leaf-mould and sand sufficient to prevent it from binding. If the compost can be squeezed tightly by the hand when moderately moist, without binding like clay or a lump of loam, it will do; or, to be more explicit, as the inexperienced may misapprehend these terms, let the sand and mould be pretty well seen in the compost after mixing—the sand especially, as its presence is more apparent than real, owing to the difficulty of incorporating it with the particles of soil. The same, indeed, may be said of the leaf-mould, which is soon eaten up in a body of loam, and the ball of soil about the roots has quite a different appearance at the end of a year. These remarks apply to all made-up composts generally. Sand should always be freely used when any doubts exist about the compost becoming adhesive eventually. The same kind of compost suits Crotons at all stages.

Young plants may be shifted as often as they require it at any time during the summer, but good-sized plants should have a liberal shift early in spring, sufficient to last them a year, if a continuous and good growth be expected. The plants only begin to make growth in earnest when the roots begin to fill the pot, and a second shift only checks them. The lightest part of the stove is the best place for Crotons, and, in order to have good bushes well furnished to the bottom, the plants should be lifted up clear of their neighbours on inverted pots, to give them light and air all round. As respects their general culture, they need regular and copious waterings—particularly old plants which have been frequently shifted, as the centre of the ball is apt to become too dry, and when that happens, steeping must be resorted to; cleanliness and syringings overhead during fine afternoons, together with a moist atmosphere in the house generally, must also receive attention. Exemption from mealy bug and red spider will depend upon a free use of the syringe and soft water. Hand-washing the leaves of such dense-growing sorts as C. angustifolium is almost out of the question, putting aside the danger of injuring them in the operation; but the brush and hand must be used if bug gets established among the shoots to any extent; and, if spider be bad, drenching the plants with water in which sulphur has been stirred, after being dissolved in milk, will arrest its ravages. A healthy growth, however, promoted by occasional liberal top-dressings, and applications of liquid manure, is the best preventive.

The Croton needs very little training, and staking is out of the question. Nothing looks better than a freely-grown, naturally-shaped bush. It is admissible, however, to tie the branches out for the sake of symmetry, and because they are apt to crowd each other disadvantageously; but more than this is unnecessary. The shoots of C. Weismanni, C. angustifolium, and others of similar habit, may be assisted in this way. These throw out their shoots, or rather branches, in bold masses, and a little regulation gives them room to develop their foliage properly. A few pieces of twisted bast run without tight tying from one limb to another, so as not to be seen, will accomplish the object perfectly well. Plants that have grown well during the summer retain their beauty through the winter. It is only necessary to reduce the supply of moisture a little at the root and overhead; but they should not be exposed to a temperature lower than 60°, and if it be kept at from 65° to 70° in mild weather, all the better. Nothing disagrees with them so much as cold, which causes the leaves to drop off, and altogether paralyses their energies for a time. To have good foliage at the end of winter, and to start the plants into growth pretty early in the season, is the way to keep Crotons thickly furnished with leaves, upon which their beauty depends. Thomas Baines.

A Good Fruit-tree Wash.—Insects and mildews injurious to the leaves of seedlings and root grafts can be kept in subjection or destroyed by a free use of the following combination of lime and sulphur—(it may be called the bi-sulphate of lime):—Take of quick or unslaked lime four parts, and of common flour of sulphur one part (four pounds of sulphur to one peck of lime); break up the lime in small bits, then mixing the sulphur with it in a tight vessel (iron best), pour on them enough boiling water to slake the lime to a powder; cover in the vessel close as soon as the water is poured on: this makes also a most excellent white-wash for orchard trees, and is very useful as a preventive of blight on Pear trees, to cover the wounds in the form of a paste when cutting away diseased parts; also for coating the trees in April. It may be considered as the one specific for many noxious insects and mildew in the orchard and nursery; its materials should always be ready at hand; it should be used quite fresh, as it would in time become sulphate of lime, and so lose its potency. Wherever dusting with lime is spoken of, this should be used.—This preparation should be sprinkled over the young plant, as soon as, or before, any trouble from aphides, thrips or mildew, occurs, early in the morning while the dew is on the trees.—This lime and sulphur combination is destructive to these pests in this way; firstly, by giving off sulphuric acid gas, which is deadly poison to minute life, both animal and fungoid; and the lime destroys by contact the same things, besides its presence is noxious to them; neither is it injurious to common vegetable life, except in excess, unless the lime to the foliage of evergreens. [The above is recommended by a commission of fruit growers, presided over by Professor Cyrus Thomas, State Entomologist of Illinois, and is part of a very full report, embodying advice as to the best means of fighting the insects that infest the orchards of that State.]

NOTES OF THE WEEK.

—— A rich harvest awaits any good cultivator who takes up the best of the Cactus family, and grows them for the sake of their flowers. So we thought the other day on seeing some lovely deep rosy vases borne by a very small plant of Echinocereus procumbens—one of the many superb flowering plants in the family.

—— The bloom of the grand old collection of Ghent Azaleas in the Fulham Nurseries has been very beautiful of late—many of the specimens have been more than thirty years in the same spot. Nothing could more forcibly illustrate the value of these brilliant shrubs for town gardens than this plantation. By the way, the Ghent Azaleas have fuller and more persistent flowers than many of our own seedlings.

—— The exhaustive article on Daphnes, by Mr. George Gordon, published this week, is highly suggestive of the variety and beauty to be gathered from a single family of almost neglected shrubs. It is to be hoped, in the interest of true horticulture, that skilful amateurs will some day take up such subjects as these, and do for them what has lately been so well done for various herbaceous and bulbous plants.

—— There is a remarkable new Yucca in flower in Mr. Peacock's collection at Sudbury House, Hammersmith—Yucca californica, a small-leaved species, with a tall flower-stem bearing great numbers of creamy-white beautiful flowers. The leaves are glaucous, narrow, and prickle-pointed. It is growing in a cool house, but would probably prove hardy in favourable soils and situations.

—— The Italian garden so called in the Botanic Gardens, Regent's Park, is done away with, and nobody will regret the disappeacance of such a puerile garden. It is replaced by a nondescript arrangement for the representation of the vegetation of various warm countries—a very feeble attempt to do what is impossible in the open air in Britain. A number of Acacias and other plants here represent one aspect of vegetation only—the type usually sent to the rubbish heap by plantsmen who respect themselves and their art. In so small a garden it is unwise to attempt what may not be well done.

—— The hasty persons who say that the Plane is the only tree that grows well in London, would do well to look at the beautiful Weeping Ash trees—often old and picturesque specimens—but looking quite fresh in their young green. The specimens in the Botanic Gardens in the Regent's Park and in the West-Central Squares are very fine, but the tree seems to do in all parts of London. The Weeping Wych Elm is also a very fine London tree.

—— On the occasion of the great Whitsuntide Show at Manchester Mr. Bruce Findlay, curator of the Botanic Gardens there, was presented by a few friends in the neighbourhood of London, who have been in the habit of attending these exhibitions, with a very chaste silver inkstand and a pair of silver candlesticks, as a token of their appreciation of the admirable way in which the gardens and exhibitions are conducted; and of his invariable courtesy to all connected therewith.

—— Cypripedium Sedeni at Drumlanrig is now producing two flower-spikes, one of which is 2 ft. 8 in. high, and bears seventeen blooms; on the other spike there are thirteen blooms, and it is nearly the same in height.

—— The thirty-third Anniversary Festival of the Gardeners' Royal Benevolent Institution is to take place on Friday, the 30th inst.; the Chairman has a subscription list open, and we hear Messrs. Sutton & Sons, of Reading, have headed it with a donation of £50. Contributions in the shape of flowers and fruit for dinner-table decoration and dessert will also be welcome.

—— In the southern and warmer parts of the country the Wistaria ought to be more frequently grown as a bush, pyramid, or low tree, as it looks very attractive when so grown, apart from the fact of flowering somewhat later than on walls. It is easy to train it into the form of a low tree, and there is a good specimen in this form in Messrs. Osborn's Fulham Nurseries.

—— There is a dark crimson variety of the well-known Crucianella stylosa now in flower at Parker's Nursery, which deserve a place in collections of hardy flowers, as it is an improvement on the common form.

—— The scarlet Delphinium of California (D. nudicaule) is a far finer plant than it was supposed to be at first. It was suspected to be somewhat miffy and tender, like several other scarlet plants from the same country which have proved failures in this; but it is, on the contrary, a very hardy perennial, and comes in flower remarkably early when there is no other colour of the same kind in the borders, and it lasts a long time in bloom. We are writing of it from observation on the sandy soils to the south of London, where it is yet in flower, though it began to blossom immediately after the last snowstorm.

—— Among improvements and additions now being made at Drumlanrig is a new range of glass 500 ft. long and 20 ft. wide. This is to be devoted exclusively to fruit culture.

—— Readers interested in rare and curious trees may like to know that a very singular one—Asimina triloba (the North American Custard Apple) is now in flower in the Fulham Nurseries, long the home of one of the choicest collections of trees and shrubs in the neighbourhood of London. Its flowers are exactly the colour of impressed brown Russia leather. At page 570 will be found a note from Mr. Robert Osborn on the subject.

—— The Rhododendrons exhibited at Manley Hall, Manchester, by Messrs. John Waterer & Sons, of Bagshot, are just now in great beauty. Upwards of fifty new and distinct varieties are exhibited which have never before appeared in Manchester, and the show altogether is an excellent one. The greatest number of visitors who have inspected it in one day is 36,000, and during Whitsuntide week upwards of 85,000 entered the Gardens.

Scarlet Nonpareils in June.—Mr. Uphill, of Moreton, Dorset, has sent us beautiful specimens of this Apple, plump, sound, and delicately flavoured as in March, the latest month to which it generally keeps. They had been gathered from the tree eight months, and since January last have been stored in Cocoa-nut fibre.

Large Specimen of Gunnera scabra.—The old tuft of this at Kew is now a remarkably striking object; the leaves are about 6 ft. high, and some of them 4 ft. through, the diameter of the specimen itself being now about 12 ft. There is provision made to give the plant plenty of water, which, combined with the advantage of a good soil on a free bottom and a sheltered position, tend to secure such a fine growth.

Clematis devoniensis.—Handsome flowers of this new Clematis, which is a cross between C. Jackmani and C. lannginosa, have been sent to us by Messrs. Lucombe, Pince, & Co It is an eight-sepaled variety, closely resembling C. lanuginosa in habit, and is of a delicate lavender-blue colour, fully 8 in. or 9 in. in diameter. It well deserves culture, either in pots or as a graceful plant for covering rustic fences or root-work.

A Gigantic Polygonum.—The many now interested in effective hardy plants for the open air should take a note of Polygonum sachalinense, which, as we write (14th June), is nearly 8 ft. high, on a sandy soil in the London district, and an imposing mass of huge Tobacco-like leaves. It is a noble subject for isolation on the Grass in the pleasure ground or for the wild garden. There is a good specimen of it in the herbaceous department at Kew. Later in the season the growth is even more remarkable.

Kniphofia caulescens.—The herbaceous department at Kew is now well worthy of a visit for the sake of seeing this noble hardy plant, which is quite distinct from any of its relatives hitherto grown in our gardens. In habit it resembles a free-growing Agave, and it has a distinct stem; it seems to produce its flowers freely, and they are large and ornamental, though perhaps not quite so showy as some of the old "flame-flowers."

Hybrid Columbines.—Blossoms of a new hybrid Columbine have been sent to us by its raiser, Mr. J. Anderson-Henry, of Hay Lodge, Edinburgh. It is a seedling from Aquilegia cœrulea, crossed with the pollen of A. chrysantha, and is intermediate in colour between its parents. The flowers, which possess very long spurs, are fully as large as those of A. cœrulea, the reflexed sepals being of a delicate lavender-blue, while the central petals are sulphur-yellow. Though Aquilegias cross with facility, this is by far the most attractive hybrid we have seen in the group to which it belongs. The same hybrid or variety, however, occurs in London Gardens and is by some supposed to be a variety of A. cœrulea.

—— A portrait of the late Mr. John Standish, of Ascot, has lately been suspended in the Lecture Hall of the Royal Horticultural Society at South Kensington. Few men better deserved such a testimonial from his professional brethren.

Silene pendula compacta.—This charming little hardy plant fully maintains its dwarf compact character, and is most useful for small beds or for edgings. Its pretty rosy-pink flowers convert the plants into balls of colour, a condition in which they continue for a long time. The seed should be sown about the middle of August, and the young plants will be ready for removal to their winter quarters by the time the beds are ready.—D.

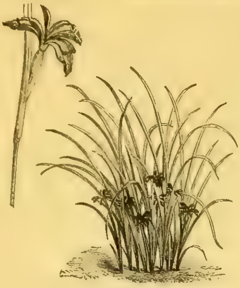
HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

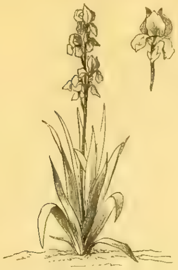
THE Irises are the greatest charm of the week in the garden. They are the Orchids of the north, with charms of colour even beyond those possessed by Orchids,—grateful fragrance, and a constitution which makes them at home in the worst soils. The delicate markings and rich and beautiful hues of those now in bloom around London are marvellous in their variety, and the rich effect afforded by some kinds is most striking. Some of the growers are beginning to suppress many of the less striking intermediate varieties—and wisely, for the presence of some of the really fine forms now in bloom is sufficient to leave an impression on the observer not likely to be forgotten, whereas some of the inferior types may be passed unobserved. In the private garden, where there is room, a large bed simple in outline should be devoted to a collection of the finer Irises, from the dwarf spring kinds to the tall early summer bloomers. This bed is best by itself in the pleasure grounds, and if well prepared at first need not be disturbed for several years, so that the plants might be allowed to become thoroughly established, in which state their blooms are far finer than when seen in nurseries, where they are frequently divided. This is a very good season in which to divide and replant Irises, provided it may be done on the spot. The young roots now pushing take readily in the fresh soil, and form strong plants for next year's bloom. A singularly beautiful effect, viewed in any way or at any distance, is afforded by a large bed of the large St. Bruno's Lily, in the Wellington Nurseries, St. John's Wood. The more we see of this plant the more we are convinced that we could not have found a more valuable hardy flower for the commencement of our coloured plate series of the present year. Four Alpine plants are now in flower, among the most useful and hardy of their kind—the white Silene alpestris, the rosy Saponaria ocymoides, the yellow Genista sagittalis, and the blue Veronica saxatilis, each dwarf, handsome, and thriving on the London clay and in the London air —more need scarcely be said as to the constitution of the plants. The Blue-flowering Rush (Aphyllanthes monspeliensis), a plant frequently met with on the hot and stony hills of southern Europe, is also perfectly at home on the London clay. It is suited for the rougher parts of the rock garden. At least one Pancratium is quite hardy (P. illyricum), now in flower in the Regent's Park. The blue Goat's Rue (Galega orientalis) is a pretty tall-growing herb, and charming for the wild garden, as it will take care of itself in any hedgerow. The tufted little hoary Thyme (Thymus lanuginosus) is smothered in flowers; the varieties of the common Sun Rose (Helianthemum vulgare) are a mass of blossom; there is one beautiful climbing Everlasting Pea (Lathyrus Sibthorpi), and there is the large and showy Geranium armenum, a somewhat new and valuable kind. Linum narbonense is a fine blue perennial Flax, a desirable plant for borders. Some of the early Lilies are opening, as, for example, the Martagon Lily and L. bulbiferum, The sparkling little white Silene quadrifida is one of the most charming Alpine flowers among the very smallest. The true everlasting Gnaphalium arenarium, which ought to be in all gardens on light or free soils, is now opening its clear yellow flowers. The most stately plant of the week is Crinum capense, which has been for some time in flower on the sunny side of one of the glass-houses in the Fulham nurseries. This and its varieties are superb plants, blooming from early summer till autumn, and effective from their tropical aspect among our ordinary garden vegetation. The old Thalictrum aquilegifolium is a pleasing flower; it is one of the plants that grow in any soil or position, and is therefore admirable for the wild garden. The following are among the plants noted during the early part of the week:—Allium sub-hirsutum, Centaurea uniflora, Omphalodes linifolia, Linaria triornithophora, Collinsias, Veronica Teucrium, and others; Bahia lanata, Lasthenia glabrata, Leucanthemum arcticum, Specularia Speculum, Galax aphylla, Dracocephalum austriacum, D. Ruyschianum, Scutellaria alpina, Phlomis tuberosa, Rheum officinale, Phlox pilosa (a dwarf species: Kew), Orchis latifolia (very fine: rock-work Kew), Erysimum australe (a dwarf, bright yellow Crucifer: Kew), Clarkias, Lupinus arboreus (very handsome on wall at Kew), Xiphion Sisyrinchium (a delicate and pretty bulbous Iris: Kew), Hesperis matronalis, Æthionema grandiflorum (very fine at Kew), Saponaria ocymoides, Iris sibirica, I. pallida, I. lævigata (very handsome: Kew), I. graminea, Anthericum Liliago, Allium Moly, Hemerocallis aurantiaca, Dianthus glacialis (very fine species), Lychnis flos Jovis, Dianthus alpinus, Iris Pavonia, and Polemonium humile. The lovely and distinct Pentstemon glaber, a dwarf perennial now passing out of flower, deserves a place in all collections from the profuseness and beauty of its delicately-coloured blossoms and its dwarf habit. Lastly, the elegantly-drooping blossoms of the Sikkim Primrose are among the fairest of the season. P. luteola, which is also in flower, is not remarkable for beauty, and is scarcely worthy of culture.

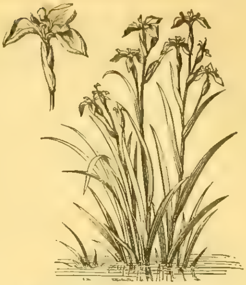
Violas—North and South.—A paragraph appeared in THE GARDEN of last week, which, while most justly allowing that these are far more beautiful in Scotland than in England, also states that we in England never find the Pansy and Hybrid Viola refuse to thrive. If by this statement the writer means that these plants thrive throughout every part of England, it is incorrect; they do not thrive here nor hardly in any part of the Eastern Counties, nor, if I remember rightly, at Belvoir in summer. Many years ago we planted Viola cornuta largely, and grew many thousands of it for edging, but again and again it failed, and had to be given up; the climate was too dry for it. It is needful, however, to add that Violas can be grown after a fashion in many places, and the word "thrive" admits of many degrees; but those who have seen such Pansies and Violas as are adverted to in THE GARDEN of last week, and are grown also at Drumlanrig, Castle Kennedy, and almost generally in fact, throughout the north of England and Scotland, will agree with me that such plants can hardly be thought worth growing for summer furnishing in the drier parts of the United Kingdom. Few flowers are more beautiful or sweet than these Violas where they go on growing and blooming throughout the season, and few are more disappointing where one bright display of beauty in April and May is succeeded by months of flowerlessness, or burnt or withered tops. Much moisture or some shade seems essential to the continuous beauty of those beautiful Pansies and Hybrid Violas.—D. T. FISH.

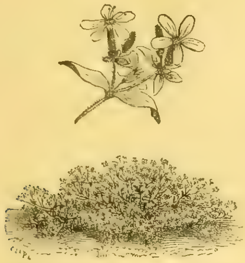
Pot Vines for Early Forcing.—It is an old practice, but by no means common, to grow Vines which are to fruit early in pots down the rafters while they are making their wood. In this way the buds become very prominent from the earliest stages of growth, and are as fully developed at the base of the rods as at the tops. The joints, too, are always very short. When a growth of 6 ft. is made, or the length intended for fruiting, the top may be nipped out, and any laterals well stopped. Ripening soon shows itself, and as growth gradually ceases, the laterals may be reduced piecemeal, till nothing but the stem and a leaf to each bud remains. The Vines then under the usual ripening treatment will soon go to rest, and if well exposed to the sun in August, aided by a suitable glass structure, they may be taken out perfectly matured early in September, and placed in a cool situation to rest. In October they may be started with every chance of their bearing a good crop, which will be ripe in March. I have always observed that Vines in pots are difficult to start in the autumn, when a period of absolute rest has not been allowed them after they have well ripeend their wood. At a place in the west of England where I was for a number of years, pot Vines were grown largely, and fruited the season following that in which they were raised from eyes. The treatment which they received when forming their fruit-bearing wood was simple enough. When the back shelves of the Pine stoves were cleared of French Beans, the Vines were then in their largest pots, and were placed where the Beans were, and trained down under the glass over the pathways at the backs of the stoves, thus occupying space that could not be used with advantage by other plants, and the results were very satisfactory.—M. TEMPLE, *Impney Hall, Worcestershire.*

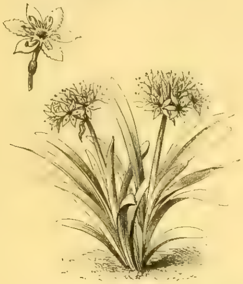
Red Spots and Cracking in Nectarines.—I have a warm Orchid-house, in which I have, among other stone fruits, Nectarines; some of the latter have this season got red spots upon them, which appeared during stoning; the spots increase with the fruit, and then crack open. Will any of your readers kindly tell me the cause?—J. H. ANGIER, *Upper Norwood.* [The red spots upon Nectarines, followed by cracking, are caused occasionally by a surfeit of water, but the disease sometimes appears even when great care has been taken to avoid over-watering; it is probable that it has its origin in the constitution of the tree; but trees affected in the way described usually outgrow the malady. There is no remedy that I know of except careful cultivation.—R.]

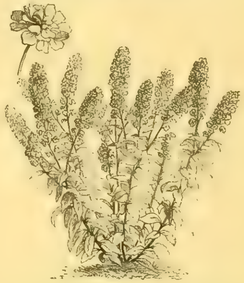

Grass-leaved Iris (Iris graminea).

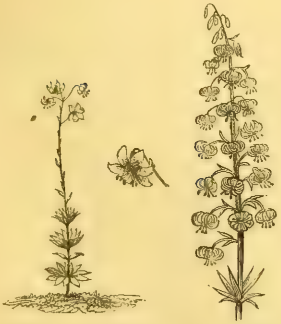

Pale-flowered Iris (Iris pallida).

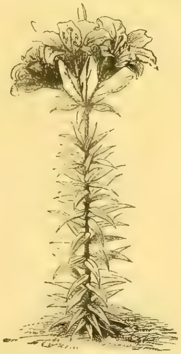

Marsh Iris (Iris Pseud-acorus).

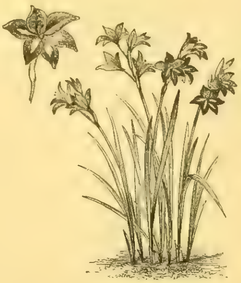

Rock Soapwort (Saponaria ocymoides).

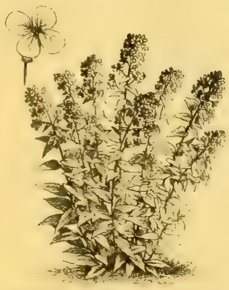

Illyrian Pancratium (Pancratium illyricum).

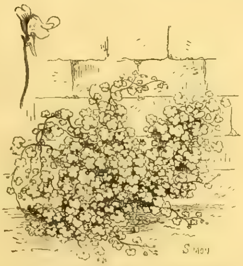

Double-flowered Dame's Violet (Hesperis matronalis, var. flore-pleno).

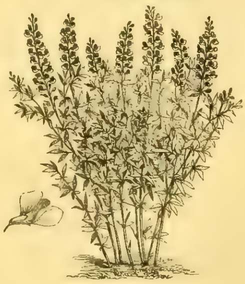

Martagon Lily and flower spike (L. Martagon).


Umbel-flowered Lily (Lilium umbellatum).


Colville's Gladiolus (G. Colvillei).


Dame's Violet (Hesperis matronalis).


Ivy Linaria (Linaria Çymbalaria).


Southern Baptisia (Baptisia australis).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

GARDEN VEGETATION IN MAY.*

By JAMES M'NAB, Royal Botanic Garden, Edinburgh.

THE month of May has been in general very dry, with much easterly wind. A few showers fell, but none of them of that genial nature so essential for vegetation at this season of the year. During May the thermometer was seven times at or below the freezing point, indicating collectively 26°, the lowest being on the mornings of the 2nd, 3rd, 4th, 7th, 9th, and 13th, when 26°, 26°, 27°, 30°, 32°, and 25° were respectively registered; while the highest morning temperatures were on the 21st, 22nd, 27th, 28th, 29th, and 30th, when 46°, 45°, 50°, 55°, 49°, and 50° were indicated. The following Table shows the amount of frost experienced during the month of May for the last twenty-two years, from which it will be seen that May, 1855, showed the lowest markings, indicating collectively 29°, while this year 26° of frost were registered during the month. When examining the Tables for the months of May, it was remarked that, with two exceptions, frost rarely occurred after the 14th. The exceptions during the last twenty-two years were in 1872, when the last recorded frost was on the 18th, and in 1874, on the 17th.

	No. of mornings the thermometer was at or below freezing point.	Degrees of Frost registered during May, from 1854 to 1876.		No. of mornings the thermometer was at or below freezing point.	Degrees of Frost registered during May, from 1854 to 1876.
1854	2	4	1866	0	0
1855	9	29	1867	1	2
1856	2	4	1868	1	6
1857	2	2	1869	4	13
1858	3	4	1870	2	6
1859	1	1	1871	3	5
1860	2	2	1872	1	4
1861	4	21	1873	2	6
1862	2	4	1874	7	16
1863	0	0	1875	0	0
1864	0	0	1876	7	26
1865	1	1			

The foliage of the ordinary forest trees rapidly progressed during May, in consequence of the moisture in the soil, caused by the heavy rains which fell towards the end of April before the leaves were expanded. The foliage is now (31st May) well matured, with the exception of certain American forest and ornamental trees, which are always late in coming into leaf—kinds which were particularly noticed in my garden report for May, 1875. The flowering of the ordinary ornamental trees is considerably behind an average. The Common Horse Chestnut is now covered with bloom, but none of the flowers are so rich in appearance as during former years, being somewhat dingy in colour, evidently injured by the frosty nights they were subjected to during the early part of the month; the leaves likewise are far from perfect, being much injured by insects. Laburnums are blooming very freely this year, particularly those trees of the Scotch variety (Cytisus Laburnum alpinus) which produced no blossoms last year. Although the common White and Scarlet Hawthorns were partially in flower on the 31st of May, a full bloom cannot be expected before the middle of June.

Herbaceous plants this year are late in blooming. Many of the early-flowering species have produced few or no seed-vessels, probably owing to the frosty weather in April while the plants were in blossom. On Cynoglossum officinale, although it flowered abundantly during spring, and is grown here in large quantities for its fruit for Class purposes, very few developed fruits are to be found; also the Myrrhis odorata and Orobus elegans, plants cultivated for their fruit. The Crown Imperial is without fruit, as well as many of the early Cowslips and Oxlips, whose barrenness can also be attributed to the numerous frosts which occurred during the month of April, when these plants were in flower.

On the 31st of May 282 species and varieties of dwarf Alpine and herbaceous plants (exclusive of duplicates) were counted in flower in the rock garden, the most conspicuous for colour and rarity being:—

Achillea Clavenæ
Andromeda fastigiata
,, tetragona
Anemone palmata
Anthyllis Erinacea
Arenaria purpurea
Aubrietia of sorts
Cathcartia villosa
Chamæbatia foliata
Delphinium nudicaule
Draba tridentata
Dryas Drummondi
Erica australis nana
Erinus alpinus
Erinus albus
,, hispanicus
Erodium Richardi
Erysimum helveticum
Fritillaria kamtschatica
Gentiana verna
Globularia trichosantha
Iris cristata
Ledum buxifolium
,, thymifolium
Lithospermum fruticosum
Menziesia Drummondi
Myosotis alpestris
Pentstemon Menziesi
Pernettya angustifolia
Phlox Nelsoni
,, setacea violacea
Primula cortusoides amœna
,, luteola
Saxifraga of sorts
Symphyandra Warneri
Thalictrum aquilegifolium roseum
Trifolium alpinum
,, uniflorum

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* Read before the Botanical Society of Edinburgh, June 8, 1876.

Garden Crowfoots.—Amongst the white-flowered Ranunculuses two of the most desirable are R. Seguieri, from the Dolomite country, and R. platanifolius, which also came to me from the same locality. They have each large, pure white flowers, but the former has very dwarf-growth leaves, which remind one of a Sidalcea, and seldom more than two flowers on a stem. R. platanifolius has a tall, branching, many-flowered stem. Its leaves resemble those of R. aconitifolius, but are larger and more deeply divided. I never saw the single form of the true R. aconitifolius. R. ferulæfolius is one of the prettiest of the yellow-flowered species, both as regards foliage and flower. I procured it several years ago from Mr. Wheeler, of Warminster, who had then a fine stock of it. R. cortusæfolius also makes a handsome pot-plant; it is not hardy here, and has to be kept in a pit, but I have seen it growing luxuriantly in the open border in Derbyshire.—H. HARPUR CREWE, *The Rectory, Drayton-Beauchamp, Tring.*

The Welsh Poppy in the Wild Garden.—For the wild garden or wilderness this Poppy (Meconopsis cambrica) is one of the most suitable of plants, and at the same time one of the most charming. It is a cheerful plant to look at in all seasons; perched on some old dry wall its masses of pinnately-cut foliage are very refreshing in appearance, but when loaded with a profusion of large orange-yellow blossoms the plant as a whole is strikingly handsome; it is a determined coloniser, ready to hold its own under the most adverse circumstances. Its home is the wall, the rock, and the ruin. It even surpasses the Wallflower in adapting itself to strange, out-of-the-way places, and it is worse to eradicate than a Dandelion or a Dock; it will spring up in the gravel walk under one's feet, and seems quite happy among the boulders in the courtyard. It looks down on one from crevices in brick walls, from chinks where one could scarcely introduce a knife-blade, and after all it delights most in shady places. No plant can be better adapted for naturalising on rough stony banks, old quarries, gravel pits, dead walls, and similar places, and its large handsome flowers will lend a charm to the most uninteresting situations.—THOS. WILLIAMS, *Bath Lodge, Ormskirk.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lord Lyon Pink.—This beautiful Pink is just now coming into flower, and in colour and quality is excelled by none. Its flowers, which are deep rosy red, are perfectly double and round, and the petals smooth. It is most useful in a cut state for button-holes or for bouquets, and makes a capital border plant. —A. D.

Clematis montana.—This strong-growing white-flowered species is now in beautiful condition at Hampton Court, where it is used with excellent effect on walls, associated with Ivy. It is the best of the hardy spring-flowering kinds. —V.

Christmas Roses Seeding.—A doubt expressed by Miss Hope whether Christmas Roses ever ripened seed in this country, caused me to examine some plants yesterday. I succeeded in collecting some ripe seeds of Helleborus niger, though by far the greater part of the pods were barren. I have not yet found any ripe seed on H. niger maximus.—SALMONICEPS.

The Hardy Palm in Flower.—The two large Palms growing in the open ground here, and exposed to all weathers, are now finely in flower. Each plant is bearing nine spathes of bloom, all of which are 3 ft. in length, and with stems as thick as one's wrist. The plants are 10 ft. and 11 ft. high respectively, with leaves from 2½ ft. to 3 ft. in width.—W. WILDSMITH, *Heckfield Hants.*

The Wild Garden by the Water-side.—In the article on this subject last week there was a clerical error which destroyed the meaning. The following sentences should read as here printed. "The juxtaposition of plants inhabiting different situations—water-plants, water-side plants, and land-plants, thriving in moist ground—would *prevent* what would, in many cases, be so undesirable—a general admixture of the whole." Also, "Near the various Irises that love the water-side might be planted those that thrive in moist ground—and they are many, including the most beautiful kinds."" Meaning that in addition to the water-side species of Iris such as I. Pseud-acorus and I. ochroleuca, the finer border Irises might be planted near.

Evergreen Trumpet Honeysuckle (Lonicera sempervirens).—This is one of the most precious of all hardy climbers, and one unrivalled for training over rustic porches, trellises, or fences so common in country districts. Planted in a deep rich soil in a warm sunny situation it flowers all the summer, and is one of the most beautiful of all the species, producing great terminal trusses of vivid orange-scarlet flowers. I have Wistaria sinensis, Clematis montana, Common Ivy, and this Honeysuckle, trained together over a trellis in front of my house, and these are gay from April when the Wistaria commences to bloom until August or September, when Clematis Jackmani succeeds the scarlet Honeysuckle. At Kew this Honeysuckle is grown in the greenhouse and is there very attractive, but I find it to be quite hardy.—B.

Fuchsias for Arches.—The Fuchsia is at home trained over an arch in any glass house; each branch is then brought by the weight of its blossoms to display its beauty in the most effective way. No plants are more effective as arches than Fuchsias properly managed. By stopping the shoots at different heights, and training them over with some care, the entire arch may be wreathed all round with almost an equal amount of beauty. It is surprising that the Fuchsia is so seldom used for this purpose. A glass corridor arched over with Fuchsias would prove a charming addition to many gardens, costing little to plant and less to cultivate.—D. T. FISH.

TREES AND SHRUBS.

THE DAPHNES.

By GEORGE GORDON.

The genus Daphne is composed entirely of under shrubs, mostly with very fragrant flowers, and either evergreen or deciduous. They are chiefly natives of Europe, but the cooler parts of Asia, including China and Japan, also produce members of the family. In cultivation, Daphnes do best when shaded in summer from the mid-day sun, and in winter screened from cold, cutting winds, and if further protected and manured by the fallen leaves of the forest trees, they will grow with a luxuriance that we can scarcely hope to witness in our gardens under ordinary treatment. Some kinds will also grow under the drip of trees, where few other shrubs would succeed; but, as all of them have but few roots, they require to be transplanted when young. The great art in managing them, however, is never to overcharge their roots with water, or let them become very dry in summer. The soil best suited for most of the species is a mixture of loam and decayed leaves, to which a liberal quantity of old road sand has been added; none of the Daphnes require a rich soil, and some of them even prefer old road-sand alone to any other, and will only thrive in such a soil: this is especially the case with the Mezereon.

The different species of Daphne are best propagated by seeds, when such can be obtained; but they are all readily increased either by layering or by cuttings of the half-ripened shoots, or by grafting upon the common Spurge Laurel or Mezereon, according to the nature of the species to be increased; the deciduous kinds succeed best on the Mezereon, and the evergreen ones on the Spurge Laurel.

In the following arrangement I have placed the different species into sections, so that if any one of the kinds in a section be known, it will form a guide, and give an idea of what the others in that division are like: for the nomenclature of the genus at the present time is in a very confused state, both in catalogues and gardens, evidently from the fact of botanists and the compilers of catalogues never having thoroughly examined or compared the different kinds in a living state; for not only are there mistakes in the names given to the different species or varieties, but many plants also are confused under the same name.

Section I.—The Broad-leaved Spurge Laurels.

1. **Daphne Laureola** (The common Spurge or Wood Laurel) L. [Synonym—Thymelæa Laureola, *Scopoli.*]—The Wood Laurel forms a dense evergreen bush, from 3 to 4 ft. high, with large, thick, glossy, dark green, obovate-lanceolate leaves, disposed in tufts at the ends of the branches; the flowers are produced in axillary, simple, drooping clusters of five, yellowish-green and shorter than the leaves. They appear in mild seasons, soon after Christmas, and continue until March, when they are succeeded by oval berries, green at first, but black when ripe, at which time they form a favourite food with the robin, and other small singing birds. The Spurge Laurel is not only a native of Britain, but of most other parts of Europe in woods, and consequently thrives best in the shade; it will grow under the drip of trees, where few other shrubs would, and, although not showy in its flowers, is a valuable plant for a shrubbery, from its being evergreen, and having thick, glossy leaves, disposed in tufts at the ends of the branches, which become almost black, if fully exposed to the sun. There is a variegated variety of the Wood Laurel, which has the leaves more or less margined with pale yellowish-white.

2. **Daphne pontica** (The Pontic Spurge Laurel), L. [Synonyms—Thymelæa pontica, *Tournefort;* Daphne caucasica, *Hartwess.*]—The Pontic Daphne has large, obovate-lanceolate, glabrous leaves, somewhat resembling those of the Lemon, especially in the colour, but much smaller; the flowers are yellowish-green, glabrous, and in many-flowered, upright clusters, each of the long, slender stalks bearing two flowers, the lobes of which are long and reflexed; the bloom is very fragrant in the evening, and is produced in April and May. It forms a large, spreading bush from 4 ft. to 5 ft. high, clothed with rather distant, broad, glossy, light green leaves, which are more oval and shorter than those of the common Spurge Laurel. The Daphne pontica is a native of Asia Minor, Greece, and Italy, and, according to Pallas, is found in Siberia in thick woods and in valleys which occur between the ridges of lofty mountains. Tournefort first discovered it on the coast of the Black Sea. There is a pretty variegated kind, which has the edges of the leaves more or less margined with pale yellow or white.

3. **Daphne odora** (The Sweet-scented Chinese Spurge Laurel) *Thunberg.* [Synonyms—D. indica, *Linnæus;* D. alba, *Hort.;* D. odora alba, *French gardens;* Daphnopsis indica, *Von Martius.*]—The leaves of this species are about 3 in. long and 1 in. broad, evergreen, broadly-lanceolate, thin, glabrous, somewhat resembling those of the Pontic Daphne. The branches are glabrous, thickly beset with leaves; and the flowers, which are disposed in terminal clusters, are sessile, remarkably sweet-scented, and, when in the bud, of a pink colour on the inside, but after expansion are pink only on the outside, the petals being white within. This kind forms a somewhat erect shrub, about 3 ft. high, very similar to the Pontic Daphne in general appearance, and produces its large terminal clusters of fragrant flowers from December to March. It is a native of China and Japan, and more or less tender. There are the following varieties, viz.:—Daphne odora foliis variegatis, *Hort.* [Synonyms—D. odora marginatis, *Hort.;* D. indica foliis marginatis, *Hort.;* D. i. variegata, *Hort.*] This kind has its leaves more or less margined, with a band of a yellowish-white colour. Daphne odora rubra, *D. Don.* [Synonyms—D. odora rosea, *French Gardens;* D. indica rubra, *Hort.;* D. pontica rubra, *Hort.*]—This beautiful variety has glossy, bright green leaves, which are longer, narrower, and more lanceolate than those of the species, and with the flowers of a deep red in the bud state, but when fully expanded of a deep pink colour internally. It was found by Dr. Siebold in Japan, and flowers from December to March. There is a fine variegated form of this variety, also from the Japanese gardens, with the leaves beautifully margined with yellowish-white.

4. **Daphne hybrida** (The Dauphin's Daphne) *Sweet.* [Synonyms—D. Dauphinia, *French Gardens;* D. Delphini, *Loddiges;* D. Dauphinei, *French Gardens.*]—The leaves of this kind are from 2 to 2½ in. long and nearly ¾ in. broad, oblong-elliptic, persistent, alternate, dark glossy green above, pale beneath, and when young thinly ciliated and with a few scattered hairs along the mid-rib and under side; the shoots are more or less hairy, stout, and of a green colour when young, but quite smooth when fully matured, and of a brown colour; the flowers are in terminal groups, nearly stalkless, of a reddish-purple, delightfully fragrant, and thickly covered on the outside with white silky hairs, which give the flowers quite a silky appearance when young. The Dauphin's Daphne is a very free-growing kind, which attains a height of 3 ft., and blooms early in the spring. It is tolerably hardy under favourable circumstances, but requires protection in severe winters, and is best treated as a frame or half-hardy shrub on account of its flowering so early in the season. It is a hybrid production, raised in 1822 by M. Fion, a florist near Paris, between Daphne odora and Daphne collina. The Daphne Blagayana, of the Belgian Nurseries, is very like Daphne hybrida in leaf and habit of growth, with tubular flowers in terminal clusters, and is probably only a hybrid from the same parentage.

Section II.—The Hill Daphnes.

5. **Daphne collina** (The Hill or Box-leaved Daphne), *Tournefort.* [Synonyms—D. collina latifolia, *Osborn;* D. buxifolia, *Vahl.*]—The leaves of this species are about 1 in. long and from 5 to 6 lines broad, obovate, alternate, and much resemble in shape and size those of the Balearic Box, with the upper surface glabrous and of a dark glossy green, while the under one is hirsutely villose. The flowers are sessile, in close terminal groups, and of a light lilac or pinkish colour, with the tubes rather broad and densely coated externally with silky white hairs, which give the tubes a silvery appearance, while the upper faces of the lobes of the flowers are quite smooth. This kind forms a beautiful, low, dense, evergreen shrub, the branches of which always take a more or less upright direction, and form a level head, covered with groups of pale Lilac flowers from February to May. The Hill Daphne is a native of Greece, Crete, and Italy, and grows from 2 ft. to 3 ft. in height, and is quite hardy.

6. **Daphne australis** (The Olive-leaved Hill Daphne), *Cyrillo.* [Synonyms—D. collina, *Tenore,* not *Tournefort;* D. c. sericea, *Loudon;* D. c. angustifolia, *Noisette;* D. oleæfolia, *Lamarck;* D. sericea, *Vahl.*]—The leaves of this kind are from 1¼ in. to 1¾ in. long, and four lines broad, lanceolate, bluntish towards the points, and tapering much to the base, glabrous above, villose or silky beneath, and much longer than those of D. collina; flowers, light purple, numerous, terminal, aggregate, sessile and villose externally, with the lobes of the calyx obtuse, pale purple, and glabrous on the upper face. Professor Tenore, of Naples, considers this kind to be only a variety of Sir James E. Smith's Daphne collina, but it differs so much in general appearance, and is besides reproduced from seed, that it certainly is as much entitled to be considered a species, as others

similarly placed in botanical publications. It differs from D. collina in its much longer and narrower leaves, and in its more loose habit of growth, and greater number of flowers in each cluster. The Daphne australis forms an evergreen bush from 2 ft. to 3 ft. high, and is found in damp, sandy, or marshy coppices, which border the lagoons and lower shores of the coast of Naples, and, according to Mr. Strangways, is plentiful on the banks of the Lake of Licola, and of the River Volturno and plain of South Agata, all near Naples, where it produces its very fragrant flowers in spring and autumn. This kind is perfectly hardy in England, but like all the species of Daphne, suffers from extreme drought in summer, although it will stand a great deal of heat if planted in light, sandy soil, and partially shaded from the mid-day sun.

Sub-section consisting of Hybrids of Daphne collina.

Many of the Daphnes intermix freely, and consequently some good hybrids, especially in this section, have been raised in the neighbourhood of Paris, among which the following are the most distinct and desirable :—

7. **Daphne neapolitana** (The Neapolitan Daphne) *Loddiges.* [Synonym—D. collina neapolitana, *Lindley.*]—The Neapolitan Daphne is a hybrid between Daphne australis and Daphne oleoides, raised at Naples several years ago, and first introduced by Messrs. Loddiges, of Hackney. It is quite hardy, grows freely, and is very fragrant. The leaves of the Neapolitan Daphne are from 1 in. to 1¼ in. long and 3 lines broad, oblong-lanceolate, tapering much towards the base, and somewhat rounded at the point, dark glossy green above, pale beneath, ciliated when very young, but otherwise quite smooth on both surfaces; the young shoots are furnished with a short, white, downy covering, which becomes brown on the adult ones; the flowers are in terminal clusters, and of a reddish-purple colour, with long, slender tubes thickly covered externally with short, silky hairs, but quite glabrous on the upper surface of the lobes of the calyx. This handsome kind forms a dense, spreading evergreen bush, from 2 ft. to 3 ft. high, which is covered with its numerous terminal clusters of fragrant flowers from March to May. The Daphne Delahayana of the nurseries seems in no way to differ from the Neapolitan, and, like that kind, is a hybrid of the same parentage, raised by M. Fion, near Paris.

8. **Daphne Fioniana** (Fion's hybrid Daphne), *Hort.*—The leaves of this kind are from 1 in. to 1¼ in. long and 3 lines broad, obovate-lanceolate, tapering much towards the base, glabrous on both surfaces, and very similar in appearance to those of Daphne oleoides, except that they are rather broader and quite rounded at the ends. The flowers are produced in terminal clusters, composed generally of small heads, containing five very fragrant flowers in each, which are of a pale lilac colour, with the tubes densely covered externally with short, silvery hairs, and the face quite smooth. This beautiful shrub flowers from March to May, is quite hardy about London, and bears a great resemblance to the Daphne neapolitana in its flowers and habit of growth. The Daphne Fioniana is a hybrid between D. collina and D. oleoides, raised by M. Fion, near Paris, and forms a dense, twiggy, evergreen bush, 3 ft. high, the very young shoots of which are quite hairy, while the old ones are smooth.

9. **D. Daphne collina-axillaris,** *Jacques.*—This kind is a cross between the common D. Mezereum and D. collina, obtained by M. Jacques, near Paris. It bears the habit of the Hill Daphne, its male parent, but produces its flowers in the axils of the leaves, like its female parent, and is decidedly very distinct from any of the other hybrids of the D. collina section. It flowers rather early in the spring, if protected from the severity of the weather.

Section III.—The Olive-like Daphnes.

10. **Daphne oleoides** (The Olive-like Daphne) *Linnæus.* [Synonyms—D. collina, *Loudon*; D. salicifolia, *Lamarck*; D. oleæfolia, *Hort*; D. glandulosa, *Bertolini*; D. cretica, *Hort.*; D. angustifolia, *French Gardens*; D. Gnidioides, *Schrader.*]—The leaves of this species are from 1 in. to 1½ in. long and 3 lines broad, lanceolate, light green, persistent, glabrous on all parts, and furnished with a minute point or mucro; the flowers are white slightly stained with lilac, especially when in the bud state, terminal, sessile, five or more together closely surrounded by leaves, and produced at various times in the year, but mostly in July and August. It is a native of Sicily, Crete, Italy, France, and Greece, where it forms a neat evergreen bush from 2 ft. to 3 ft. high, but less showy than many of the other kinds, on account of its flowers being white and in small clusters. Introduced in 1815. There is a variety of this species with variegated leaves.

Section IV.—The Garland Daphnes.

11. **Daphne Cneorum** (The Trailing Garland Daphne) *Linnæus.*—The leaves of this elegant shrub are ½ in. long and 1½ line broad, linear-lanceolate, glabrous, mucronate, persistent, and thickly set upon the young shoots; the flowers are rather small, in terminal aggregate umbels or groups, sometimes twenty in number, sessile, reddish-pink, very fragrant, and smooth on the upper side, but with the tubes thickly covered with short, silky, white hairs, externally and closely surrounded by the leaves; the berries are white and globose. The Trailing or Garland Daphne seldom grows more than from 9 in. to 12 in. high, but forms a most beautiful trailing evergreen, which produces its charming, bright pink flowers in April and September in great abundance. It is a native of Austria, Switzerland, Hungary, France, Etruria, and Germany; first introduced in 1752, and is one of those small shrubs which will repay any extra trouble bestowed upon it, for its flowers are beautiful, and its perfume delightful. If the Garland Daphne be carefully trained along the ground, it may be made to cover much more than is commonly allowed for the branches which radiate from the centre of the plant, and thus be made to breathe forth fragrance to fill the gales of April and September with delight. There are the following varieties :—Daphne Cneorum argenteum (the Silvery-leaved Garland Daphne) *Loddiges.* [Synonym—D. Cneorum elegantissimum, *Hort.*]—The leaves of this variety are margined with a silvery whiteness, which gives the plant a very elegant appearance. Daphne Cneorum aureum (The Golden-leaved Garland Daphne), *Hort.* [Synonyms—D. Cneorum luteum, *Hort.*; D. C. variegatum, *Knight*; D. C. fol.-luteo, *Belgian Gardens.*]—The leaves of this variety have a narrow yellow edging or band round the leaves. Daphne Cneorum flore-albo (The White-flowered Garland Daphne), *Loudon.* [Synonym—D. Cneorum album, *Hort.*]—This variety only differs from the common form of the plant in having white flowers, which become slightly tinged with pink before they fade.

12. **Daphne Cneorum maximum,** *Jacques.* [Synonyms—D. Cneorum grandiflorum, *Loddiges*; D. C. pyramidale, *Makoy*; D. C. strictum, *Hort.*]—The adult leaves of this kind are from 1 in. to 1½ in. long, and 3 lines broad, subspatulate, rounded at the ends, and regularly tapering to the base, sessile, glabrous on both surfaces, mucronate, persistent, and much larger and longer than those of the Garland Daphne, while the young leaves, like the young shoots, are more or less hairy, especially round the edges. The flowers are in small, terminal, aggregate, sessile clusters, pale rose, very fragrant, and smooth on the upper surface, but with the tubes densely covered externally with silky, white hairs, which give them quite a silvery appearance. The upright habit of growth slender, twiggy, forked branches, subspatulate leaves, and pale rose-coloured flowers, with silky, white tubes, at once distinguish this kind from the Daphne Cneorum and all others. It is a hybrid production raised by M. Jacques, of Paris, between Daphne collina and D. Cneorum, the latter being its female parent, and like it when in a luxuriant state; flowers twice a year, namely in April and September. This kind is quite hardy, and forms an evergreen bush 2 ft. high, which, if kept in the greenhouse, will flower through the autumn and winter months.

13. **Daphne striata** (The Striped-calyxed Garland Daphne) *Trattinik.* [Synonym—D. Cneorum var., *Schrader.*]—The leaves of the Striped Daphne are from 1 in. to 1½ in. long and 3 lines broad in the widest part, subspatulate, linear, mucronate, sessile, glabrous, and persistent; branches slender, straggling, and much divided; flowers terminal, aggregate, quite glabrous, and of a purplish colour, with the lobes of the calyx acute and the tubes slightly streaked externally. This kind bears some resemblance to the Daphne Cneorum, but is at once distinguished by its larger subspatulate leaves and quite glabrous flowers. It is a native of Switzerland and Hungary, where it grows 2 ft. high, and flowers in April and September.

Section V.—The Silvery-leaved Daphnes.

14. **Daphne Tarton-raira** (The Silvery-leaved Daphne) *L.* [Synonym—Passerina Tarton-raira, *Schrader.*]—The leaves of this elegant plant are small, obovate, nerved, alternate, silky, and persistent, with the branches weak, irregular, and scarcely ligneous; the flowers are axillary, solitary, somewhat globular, broadest towards the base and concentrated at the mouth, sessile, pale pink, silky externally, and with imbricated scales at their base; the leaves of this kind are remarkable for their smallness and silkiness, and the whole plant for its white silvery appearance. It is a native of France, grows 18 in. high, and flowers in May and June. Previous to the Linnean arrangement Tarton-raira was the principal name by which this plant was known, and, according to Gerard, it originated

with the French from its rarity, for, he says:—"Tarton-raira, called in English Gutwoort, which groweth by the sea, is cathartical, not of any long continuance among us, and a stranger very goodly to behold, and therefore, in the mother-tongue of the Massilians, is called Tarton-raira." The Daphne Tarton-raira is quite hardy if planted in a dry, sheltered situation, and is best increased by seeds, which can easily be obtained from France, for it does not transplant well except when young.

15. Daphne tomentosa (The Tomentose Greek Daphne), *Lamarck.* [Synonyms—D. Tarton-raira major, *Hort.*; D. T. tomentosa, *Loudon*; D. villosa, *Linnæus*; D. argentea, *Springel*; D. sericea, *Hort.*, not *Lamarck.*]—The leaves of this kind are oblong-obtuse and covered on both surfaces with a dense tomentum, which gives them quite a hoary appearance. The flowers are small, sessile, pale-straw coloured, with the tubes densely covered with white villose hairs, and come out in axillary clusters, imbricated with scales at their base. This kind is easily distinguished from the Tarton-raira of the French by its greater stature, small tubular-villose flowers,* and larger and more obtuse leaves, which are covered with tomentum instead of silky down. The Woolly Daphne is a native of Greece and Asia Minor, where it attains a height of from 2 ft. to 3 ft., and flowers from May to July. The Daphne Lutetiana of the Paris Gardens is a slender dwarf-growing plant of hybrid origin, somewhat resembling the Tarton-raira, which is its female parent. It is pretty, but difficult to cultivate, except in pots, and flowers in May and June.

Section VI.—The Flax-leaved or Alpine Daphnes.

16. Daphne alpina (The Wild or Mountain Mezereon), *Linnæus.*—The leaves of the Mountain Daphne are linear-lanceolate, a little obtuse, alternate, small, deciduous, and tomatose beneath. The flowers are of a pale yellowish-white, tubular, silky outside, sessile, very fragrant, and produced in axillary, aggregate clusters of fives from the sides of the branches. The Mountain Mezereon is a low, branching, deciduous shrub, 2 ft. high, which flowers from April to June, and produces its round red berries in September. It is a native of Austria, Switzerland, France, and Italy, and was introduced in 1759.

17. Daphne altaica (The Altaian Daphne), *Pallas.*—The leaves of this kind are obovate-lanceolate or oblong, broadest towards the outer extremity, and narrowed downwards, glabrous on both surfaces, deciduous, somewhat glaucous, and yellowish-green, especially when young. The flowers are sessile, in terminal umbels of five, white and scentless, with the tubes of the flowers rather slender, and the lobes of the calyx broad and revolute. The Altaian Daphne forms a neat, compact, deciduous shrub, 3 ft. high, with slender shoots of a reddish-brown colour. It is a native of the Altai Mountains, in Siberia, flowering in May and June; introduced in 1795.

18. Daphne pubescens (The Downy sub-evergreen Daphne) *Linnæus.* [Synonyms—D. Tarton-raira pubescens, *Loudon;* D. Thymelæa italica, *Micheli.*]—The leaves of this kind are linear-lanceolate, alternate, pointed, sub-evergreen, and somewhat thickly placed along the branchlets on old plants; the flowers are axillary, five or less in each axil, sessile, yellowish white, shorter than the leaves, and with the tube thread-shaped and downy. This is a fine sub-evergreen shrub, which grows 3 ft. high, with the stems simple and pubescent. It is found wild in France, Austria, and the States of Venice and Lombardy, producing its flowers in May and June among the leaves which partially hide them. It is nearly related to Daphne alpina, and was introduced in 1810.

19. Daphne Gnidium (The Spurge Flax or Mountain Widow Wayle) *Linnæus.*—The leaves of the Spurge Flax are 1 in. long and 1½ lines broad, linear-lanceolate, acute-pointed, glabrous on both surfaces, persistent, and very similar in size and shape to those of the common Flax; the flowers are rather small but numerous, in terminal, panicled racemes, very fragrant, and of a pale yellowish-white slightly tinted with pink, and the tubes, which are rather short and stout, are thickly coated with a coarse white down. The D. Gnidium is an elegant little evergreen shrub, with numerous terminal panicles of sweet-scented, pinkish-white flowers, which in autumn are succeeded by small, globular, red berries. It is a native of Spain, France, Naples, Italy, and Greece, where it grows to a height of 2 ft., and flowers from June to August. This species retains the name Gnidium from the probability of its being the true Gnidium of the Greeks, who named it after Gnidus, a promontory and town in Asia Minor, where Venus had a temple dedicated to her; it also bears the vernacular names of Widow Wayle and Spurge Flax, and is said to be much used in the south of Europe for dyeing wool a yellow colour. It is rather tender, and is chiefly propagated by grafting on the common Spurge Laurel, and thrives best when planted in a mixture of peat and old road sand.

20. Daphne Aucklandi (Lord Auckland's Daphne), *Lindley.* [Synonym—D. mucronata, *Royle.*]—The leaves of the Affghan Daphne are linear-lanceolate, acute-pointed, glabrous, glossy-green above, and persistent. The flowers are in terminal clusters, at first of a greenish-white, but eventually of a pale straw colour, and scentless; produced in April and May. This species forms a stiff evergreen bush, from 2 ft. to 4 ft. high; it is found in great abundance in Peshawur and on the snowy ranges of Kunawur and other parts of the Western Himalayas, at elevations from 10,000 ft. to 12,000 ft., near the limits of perpetual snow, constituting the chief vegetation. It is also found on the hills from Cabul to Jellahabad, and was first sent to England by Lord Auckland, when Governor-General of India, as "the shrub from the inner bark of which the Affghans prepared the matches for their match-locks." It is perfectly hardy, and bears a considerable resemblance to Daphne Gnidium, and produces an excellent yellow dye.

21. Daphne viridiflora (The Green-flowered Daphne), *Aiton.*—The leaves of the Green-flowered Daphne are obovate, entire, quite smooth on both surfaces, glossy green above, pale beneath, persistent, and about the size of those of Daphne collina; the flowers are rather small, tubular, smooth, bright glossy green, scentless, and in terminal heads, appearing in April and May. This species forms a thickly-clothed evergreen bush from 2 ft. to 4 ft. high, on the lower or outer mountains of Nepaul, whence it was sent many years ago by Dr. Wallich to the Royal Gardens at Kew; but being tender, and one of the least desirable of the genus, on account of its flowers being green and scentless; it appears now to be lost in this country.

Section VII.—The Thymelæa Daphnes.

22. Daphne Thymelæa (the Milkwort-like Daphne), *Linnæus.* [Synonyms—D. alpina glabra, *Plukenette*; D. glabra, *Noisette*; Passerina Thymelæa, *De Candolle.*]—The leaves are small, lanceolate, glabrous, crowded, persistent, and of a glaucous hue. The stems are much branched, with the branches simple and slender, and the branchlets warted; the flowers are small, pale yellow or straw coloured, axillary, sessile, and produced on the sides of the branches; the berries are small, and of a yellowish colour when ripe. This kind is a native of Spain and France, near Montpellier, where it forms a branched evergreen shrub, 3 ft. high, flowering from February to April. It is called the Wild Olive in Spain, and is tender, and requires protection in winter around London. Professor De Candolle and other Continental botanists consider this kind to belong to the genus Passerina, or Sparrow-worts, but as it is found recorded in all English works as a species of Daphne, I have retained it as such in the present enumeration; it, however, is very distinct from all the other species, both in habit and general appearance.

Section VIII.—The Mezereon or Leafless-flowering Daphnes.

23. Daphne Mezereum (The common Mezereon), *Linnæus.* [Synonym—D. Mezereum rubrum, *Loudon.*]—The leaves of the common Mezereon are rather large, lanceolate, or oblong-lanceolate, smooth, and deciduous; the flowers are thickly distributed over the leafless twigs of the past year, mostly in threes, but sometimes in twos or fours, and produced before the leaves develop in spring; they are agreeably fragrant, of a bright pink colour, and are produced in February and March. The berries are very acrid, and thickly set along the shoots, green at first, but bright red when ripe in September. The D. Mezereum is a well-known, deciduous, fastigiate shrub, which grows from 3 ft. to 4 ft. high, and is much valued in gardens and shrubberies for the beauty and fragrance of its flowers in the early months of the year, when, as Cowper says, its branches are "though leafless, well attired and thick, beset with blushing wreaths investing every spray." The Daphne Mezereum is found in woody situations in the northern parts of Europe; in England it is rare, being only found in the southern and western parts. Baron Welden found it in Dalmatia. The whole shrub is poisonous to human beings, though the berries are a very favourite food with finches and other birds, more especially the robin. The bark and branches afford a yellow dye, and, when chewed, excite an unsupportable sensation of burning in the mouth and throat, and when applied to the skin in a fresh state or infused in vinegar raise blisters. The berries, also, which are even more acrid than the bark, have been known to produce fatal effects on children, who have been tempted by their beauty to eat them. The best remedies in such cases are oil, fresh butter, or some emollient, to allay the violence of the inflammation. The common D. Mezereum is increased by seeds, but if they be suffered to get dry before being sown they will remain two years in the soil before making any progress; while, if sown in the autumn when ripe, and immediately after gathering, they will generally come up the following spring. The best time for transplanting the D. Mezereum is in October, as it begins to vegetate so early; and the most suitable soil for it, and one in which it thrives best, is a loamy soil, to which has been added a liberal supply of old road drift and rotten leaves. There are the following varieties of the Mezereon:—Daphne Mezereum flore-albo, *Loudon.* [Synonym—D. Mezereum album, *Hort.*]—This variety only differs from the ordinary form in having white flowers and yellow berries. D. Mezereum autumnale, (the Autumnal-flowering Mezereon), *Loudon.* [Synonym—D. Mezereum sempervirens, *French Garden.*]—The Autumn-flowering Daphne Mezereon differs from the common form in not being fastigiate in its habit of growth, but spreading, and in having larger leaves and deeper-coloured flowers, which first appear in November and continue in succession to the end of March. The leaves are also retained much longer on the plant, especially in mild seasons, but the berries are seldom or ever produced.

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* The woodcut given in the "Arboretum Britannicum" as that of Tarton-raira, belongs to this kind, and shows the tubular flowers.

24. Daphne Fortunei (Fortune's Chinese Daphne Mezereon) *Lindley.* [Synonym—D. Genkwa, *Siebold.*]—The leaves of this beautiful plant are oblong-lanceolate or ovate-oblong, thin, alternate or opposite, deciduous, and, when fully matured, covered with soft fine hairs, but when young, quite silky; the branches are downy, slender, and more or less ascending; the flowers are rather more than 1 in. long, tubular, with the border divided into four roundish, oblong-obtuse, uneven lobes, of which the inner are the smallest, deep lavender or bluish-lilac covered externally with closely pressed hairs, and densely arranged in clusters of four along the last year's shoots in March and April before the leaves are developed. The Daphne Fortunei is a deciduous, slender, upright-growing shrub, and one of the earliest harbingers of spring; it seldom attains a height of more than 3 ft., but with numerous long, slender, downy twigs, which, like the Mezereon, are leafless in winter, but in spring thickly garnished with large, tubular, violet-coloured flowers, which spring from the axillary buds along the shoots before the leaves appear. Mr. Fortune found this kind at Ningpo, Shanghai, on the Chusan Hills, and on many of the hills in the province of Che-kiang, but never in a wild state in the southern parts of the Chinese Empire. Dr. Siebold found it in Japan, and published an account of it in his "Flora of Japan" under the name of Daphne Genkwa, that being its vernacular in Japan, while the Chinese name for it is Nu-lanse. Fortune also states that it is used medicinally by the Chinese in the same way as the D. Mezereum is in Europe; the bark, being extremely acrid and producing blisters on the skin, is much used by the Chinese doctors in cases of rheumatism. This beautiful shrub is easily increased, either by cuttings of the half-ripened wood or by grafting on the common D. Mezereum. It is perfectly hardy, and grows well in any good garden soil if kept moist during the growing season. Introduced in 1844. The Daphne Championi of Mr. Bentham, a kind not yet introduced, is an elegant, slender, deciduous shrub, very similar in all respects to Daphne Fortunei, and was found on the Chusan Hills. It, however, differs from that kind in being altogether more slim, and in having very much slenderer and smaller flowers, which are of a whitish colour.

25. Daphne Houtteiana (Van Houtte's Purple-leaved Mezereon) *Lindley.* [Synonyms—D. Mezereum fol.-purpureis, *Hort.*; D. M. fol.-atropurpureis, *Hort.*; D. M. atropurpureum, *Hort.*; D. Houttei, *Low;* D. Van Houttei, *Hort.*]—The leaves of this kind are from 3 in. to 3½ in. long, and 1 in. broad in the widest part, oblong-lanceolate, somewhat pointed and tapering much towards the base, quite smooth, deciduous and deep green, stained with purple on the upper side when fully developed, but when quite young and in the bud state, of a dark purple colour. The shoots, when young, are also of a purple colour, but when old, light brown, stout, and spreading; the flowers are small, dark purple, quite smooth, and are produced along the shoots of the previous year, before the young leaves appear, on short, lateral, axillary, leafless projections, mostly in threes, but sometimes in twos or fours, with slender tubes and long lobes more or less reflected, and supported generally by a pair of long membranous bracts at the base of each cluster. This singular kind forms a robust spreading bush 3 ft. or 4 ft. high, with all the leaves collected on the young branches, while the old ones are naked. It is quite hardy, and flowers in the spring before the leaves appear, and is said to be a hybrid between the common D. Mezereum and Spurge Laurel, which originated in one of the Belgian nurseries. The following species of Daphne is not yet introduced, but deserves to be here noticed, so as to direct attention to its importation:—Daphne papyracea (The Indian-paper Daphne), *Wallich.* [Synonym—D. cannabina, *Wallich.*—The Bholua, *of the Nepaulese.*]—The leaves of the Paper Daphne are from 2 in. to 2½ in. long, and ¾ in. broad in the widest part, oblong-elliptic, or oblong-lanceolate, rather distant, alternate, smooth, persistent, and when young more or less glaucous on the upper surface; branches irregularly spreading, few and stout; flowers in terminal clusters, tubular, white, fragrant, and similar in size to those of Daphne odora. This species is found growing plentifully in the mountains of Bhotan and Nepaul, at elevations of from 4000 ft. to 8000 ft., where it attains a height of 4 ft., and flowers from March to May. A soft kind of paper is made from the inner bark of this kind in Nepaul and Bhotan, which possesses the advantage of being strong, not liable to crack, or be injured by insects in India.

The following kinds were formerly included among Daphnes, but are now separated, and form distinct genera, viz., Daphne papyrifera, *Siebold.* [Synonyms—D. chinensis, *Lamarck;* D. Gardneri, *Wallich,* the Edgworthia chrysantha of *Lindley.*] Daphne tinifolia (The Bonace Bark Tree of the West Indies), *Swartz,* is now Nordmannia tinifolia of Drs. Fischer and Meyer. The Nordmannia cordata of Loudon's "Hortus Britannicus" (1850) is a Boraginaceous perennial, and identical with the old Borago orientalis of Linnæus, although in the "Hortus Britannicus" it is erroneously said to belong to the Natural Order Thymelaceæ.

A Custard Apple flowering in England.—The North American Custard Apple (Asimina triloba) is now in bloom here. Our foreman says he has known it for over fifty years, and this is the first time he has either seen it or heard of it producing flowers. In his dictionary Paxton calls it pale purple, and states that it flowers in August. Our plants seem to contradict this statement, as the flowers are reddish-brown, and before this month is out the plants will have finished flowering; the flower before it fully expands is green. Our plants are about 5 ft. high; we hope that they will ripen fruit, as we are anxious to see what it is like.—Robert Osborn, *Fulham.* [A figure showing the curious leathery-looking flowers of this plant will be given in our columns shortly.]

Cultivated Brambles.—I am glad to find that you have figured and described the beautiful Bramble (Rubus deliciosus), which I consider well worth a place in every shrubbery border and wild garden. R. spectabilis is another attractive plant, which has fresh green leaves and delicate rosy flowers; and its ally, R. odoratus, an old but very lovely species, with scented leaves, bears great rosy flowers, the petals of which are curiously crimpled. The double-flowered form of our common Blackberry is one of the best of all the species for margins of natural rocks on outlying portions of the pleasure grounds and semi-wild woodland walks. One of the most delicate of all the rosy-flowered species is R. arcticus, a dwarf kind, well suited for culture on rock-work. It is wild in N. Europe and America; and in Sweden its fruit is preserved in enormous quantities for winter consumption. To these may be added R. biflorus, the White-washed Bramble, a kind now common in our gardens; and one which is effective as a wall plant even in winter when trained among Ivy.—B.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Overcrowding of Trees in London Parks.—The way that very fine young trees are now crowded together in many parts of the London Parks, preventing their development into good or even middling specimens, is far from creditable. Along Rotten Row and Piccadilly, the jamming together is such as would not be tolerated in any private place where any attention was paid to trees. The trees are robbed of light and room above, and of food and moisture below.—V.

Copper Beeches at Clumber.—The fine old Copper Beeches in the pleasure grounds here are at this season grand objects amongst the many and different tints of green surrounding them, more particularly our Copper Beech avenue, with every second tree a Scarlet Thorn in full blossom.—J. Miller, *Clumber.*

Embothrium coccineum in England.—This brilliant-flowering tree has already, we learn, attained a height of from 25 to 30 ft. in Cornwall. Even if it only grows there it will be a remarkable gain for our gardens. Mrs. W. Duffield has drawn it for The Garden, and we hope to publish a fair portrait of the plant in due time.

Rhododendron Dalhousiæ in Cornwall.—We have here a plant of R. Dalhousiæ in full bloom in the open air; it has 140 flowers open, and is a magnificent object. It is grafted on R. ponticum, and has been planted out about ten years, and during that time has never lost its buds through frost—while we have several other plants about the place, seedlings on their own roots, that lose their buds in sharp winters, 8° of frost being sufficient to destroy them.—"Gardeners' Chronicle."

Rate of Growth of Forest Trees in New England.—Mr. J. W. Manning, of Reading, Mass., gives his experience in the "Boston Cultivator" of the growth of forest trees. Norway Spruce and Scotch Larch were planted, and in nine years the Spruce trees were 15 ft. high with 12 ft. spread of top. In fourteen years the Larch were 30 ft. high, with a spread of 20 ft., and a circumference of 4 ft. at the base. One Larch was 40 ft. high in seventeen years. Silver Maple trees planted in 1864 are now 35 ft. high, and 7 to 10 in. in diameter at the base. Elms planted in 1856 now range from 30 to 40 ft. high, and are 15 in. in diameter.

HARDY BAMBOOS IN THE WILD GARDEN.

In many parts of England, Ireland, and Wales, various kinds of Bamboos are perfectly hardy, and not only hardy, but thrive freely. In cold, dry, and inland districts, it is true they grow with difficulty—all the greater reason for making the best use of them where they grow freely. Their beauty is the more precious from their being wholly distinct in habit from any other plants or shrubs that we grow. The delicate feathering of the young, tall, and slender shoots, the charming arching of the stems have often been fertile in suggestion to the Japanese artist, and often adorn his best work. They may be enjoyed with all the charms of life in many gardens. The wild garden, where the climate is suitable, is the best home for Bamboos. They are so tall and so enduring at the roots that they will take care of themselves among the tallest and strongest plants or bushes, and the partial shelter of the thin wood or copse preserves their abundant leaves from violent and cold winds. Along by quiet Grass walks, in sheltered dells, in little bogs, in the shrubbery, or in little lawns opened in woods for the formation of wild gardens, the Bamboo will be at home. The commonest kind is that generally known as Arundinaria falcata (sometimes called Bambusa gracilis); but others, such as Bambusa Metake, B. Simmonsi, and B. viridis-glaucescens, are of equal or greater value. They all delight in rich, light, and moist soils. R.

MY NASTURTIUMS.

Quaint blossom with the old fantastic name,
By jester christened at some ancient feast!
How royally to-day among the least
Considered herbs, it flings its spice and flame!
How careless wears a velvet of the same
Unfathomed red, which ceased when Titian ceased
To paint it in the robes of doge and priest.
Oh, long-lost loyal red which never came
Again to painter's palette—on my sight
It flashes at this moment, trained and poured
Through my Nasturtiums in the morning light.
Like great-souled kings to kingdoms full restored,
They stand alone and draw them to their height,
And shower me from their stintless golden hoard.

Schribner.

THE FRUIT MARKET.

It is high time that the enormous profits made by fruiterers ought to be ventilated, in order that consumers may see that they have to pay higher prices for fine Grapes and other fruits than they ought to do. No doubt fruit is a very perishable commodity with which to deal, and allowance ought to be made for a good profit, but when from 50 per cent. to 100 per cent. profit is made on the best English-grown Grapes and Pines, and early forced Peaches and Nectarines by fruiterers, it is time growers knew the reason why. Wealthy people can afford to give the highest prices for fine Grapes and Pines for their entertainments, but for the British public to pay such high profits to fruiterers is another matter. Last year I had occasion, in the beginning of July, to order three Pine-apples from a fruiterer in London. I had three smooth-leaved Cayennes sent me of no great weight, and I expected that they would cost from 30s. to £2 each. On receiving the bill, however, they were charged £3 3s. each, and on my remonstrating against such an excessive price I was informed that the Pines were English-grown, and that the market at that period was very short of fruit of home growth. Now that the market is so well supplied with Pine-apples from the Azores, English-grown fruit must fall off in cultivation; still a well-grown English Queen Pine ripened in the summer months is the most delicious of all varieties, and will always command the highest price. If growers of first-class Grapes for winter use, and of Queen Pines to ripen in June, July, and August, could sell their fruit to the public at a fair profit, without going through the hands of retailers, then the public would get these fruits cheaper than they now do, and their cultivation would be greatly increased. T.

PROFESSOR ASA GRAY ON UNDEVELOPED FRUITS.

A few wild fruits may be mentioned which manifestly have great capabilities that may or may not be developed in the future. The leading instances, in my mind, are the Persimmon and the Papaw; not the true Papaw, of course, which we have in Florida, but the Asia Minor or Western Papaw, so called. Both Persimmons and Papaws are freely offering from spontaneous seedlings, incipient choicer varieties to be selected from both fruits when only a few years old, thereby accelerating the fixation of selected varieties into races; and both give fruits of types wholly distinct from any others we possess of temperate climates. He that has not tasted Kaki has no conception of the capabilities of the Diospyros genus. The Custard Apples of the West Indies give some idea of what might be made of our Papaw when ameliorated by cultivation and close selections for many generations. I have understood that one of the veteran pomologists of the country, Dr. Kirtland, of Ohio, a good while ago initiated a course of experiments upon the Papaw in this respect; it would be well to know with what success, and if the breeding and selection have been continued. Our American Plums have for many years been in some sort of cultivation, and have improved greatly upon the wild forms; but I suppose they have not been systematically attended to. Their exterior liability to black knot and other attacks renders them, for the present, unsuccessful. Finally, if pomology includes Nuts, there is a promising field uncultivated. Our wild Chestnuts are sweeter than those of the Old World; it would be well to try whether races might not be developed with the Nuts as large as Marrons or Spanish Chestnuts, and without diminution of flavour. If we were not so easily satisfied with a mere choice between spontaneous Hickory Nuts, we might have much better and thinner-shelled ones. Varying as they do, excessively in the thickness of the shell and the size and flavour of the kernel, they are inviting your attention and promising to reward your care. The Peccan is waiting to have the bitter matter between the kernel bred out; the Butternuts and Black Walnuts to have their excess of oil turned into a farinaceous and sugary matter, and their shells thinned and smothered by continued good breeding, when they will much surpass the European Walnut.

Testing the Purity of the Air.—The quantity of foreign bodies contained in snow may, as M. Boudier has recently shown, be taken as a means of measuring the purity of the air at different heights. M. Boudier collected snow at Enghien from 50 metres to 60 metres in height, at Montmorency from 120 metres to 130 metres, and at the top of the hill from 180 metres to 190 metres; and the average quantities of foreign matters per kilogramme were severally 34·95, 13·25, and 11·50 milligrammes. Comparing his numbers with those obtained by M. Tissandier on the Notre Dame, in Paris, he shows the air at Enghien to be twice as pure as that of Paris, four times as pure at Montmorency, and six times as pure at the summit

—quantities doubtless variable with atmospheric currents, &c. The substance met with in greatest quantity was soot, and intimately mixed with it were ferruginous corpuscles, which the author considered of terrestrial origin. Next in abundance after soot were cryptogamic substances, especially Protococcus viridis, in quantity proportional to the number of trees in the neighbourhood. There was a variety of other substances—granules of starch, vegetable fibres, hairs, epithelial cells, probably of birds, *debris* of acarians, of hairs, feathers, &c. This mixed dust tends to descend by gravity into the lower layers if the currents be not too strong.

PECULIARITIES OF THE PAST SEASON.

AMONG the various peculiarities incidental to the early portion of the present year, I have noticed two for which I cannot account, and I should be glad to know if they have been observed by others. 1. It so happened that my crops of Peas, Broccoli sowings, &c., were unprotected, and as there was a good deal to be done in the kitchen garden, I determined not to bring out any nets till I found they would be required. Strange to say, the birds took no notice of the Brussels Sprouts and Broccoli as they appeared above the ground, and up to the present time they have been just as indifferent with regard to the Peas. Along the double rows I could trace where they had dusted their feathers in the dry mould, with the little green shoots of the Peas peeping up within an inch of their beaks. Last year and in the preceding one they would even force their way under the net if they could find an opening anywhere; but the very early Peas they never attack. 2. The common Fuchsia grows here in some of the shrubbery borders of the flower-garden. It usually has no life left in it above the ground when the winter is over, and then the old branches are cut out to make room for the new shoots that spring from the crown of the plant. This year the old branches remained alive to their extremities, and will now do duty a second season. The winter and early spring were of quite average severity, and would certainly have destroyed or very much injured a Passion-flower growing on a south wall if it had not been carefully protected. Most of the shoots that the covering did not reach were killed by the cold. In former years I noticed that the branches of the Fuchsia remained alive only in very mild winters. Have these peculiarities been observed elsewhere, and can they be accounted for? B. S.

Uppingham.

Sea-Gulls in the Garden.—Might not a sea-gull be sometimes a useful addition to a garden, and more especially a kitchen garden, as a means of keeping down slugs? Most of the feathered appliances which are at hand in the poultry-yard do more harm than good; the hens send crops and soil alike flying before their scratching operations, the ducks attack the vegetables, and a peacock will follow the line of a row of freshly-sown Peas deliberately, till none are left to be protected from other enemies; but a sea-gull prefers animal food if it can get it. All those who have lived near the coast will remember the flocks in which it will settle on some ground in process of being turned up; some of the birds scattered like flakes of foam all over the field, and some following the plough, all too intent on their prey in the newly-made furrows to care much for lookers-on. The birds can be made to eat vegetable food, but their great preference for the slugs and other foes to the plants which these prey on is a double security to the kitchen garden crops, and in this capacity a sea-gull who has been tamed by kindness sometimes is a very useful addition. The disposition of the gull to drive off other birds as intruders would be another recommendation, and in itself it is a handsome addition to the garden, welcome picturesquely, and a safe pet where there are children. In the instance named the bird had been picked up, maimed, and tamed by the kindness of its owners, but young specimens could be procured from their rock or marsh breeding places and tamed with certainty; or if some eggs were put under a duck it might save all difficulty. A hen cannot be trusted, and in the only instance in which I have myself tried one with sea fowls' eggs, she selected them from her own and broke them all.—" Gardeners' Chronicle."

The Royal Agricultural Society of England.—At a recent meeting of this Society, the half-yearly report of the Council was presented and adopted. The Society now consists of 83 life-governors, 78 annual governors, 2164 life members, 4013 annual members, and 11 honorary members, making a total of 6349. The funded property of the Society remains the same as at the last general meeting—viz., £18,112 7s. 8d. New Three per Cents., and the balance of the current account in the hands of the bankers on the 1st inst. was £2803 10s. 7d., while the sum of £2,000 remained on deposit.

PLATE XXV.

TYERMAN'S GROUNDSEL.

(SENECIO PULCHER.)

Drawn by H. HYDE.

THIS, one of the most beautiful of Groundsels, though long known to botanists, has only been in cultivation in this country for five or six years. It is a native of Uruguay, and was originally discovered by Tweedie upwards of forty years ago at the foot of the Sugar Loaf Mountain near Maldonado, and at Aldoa, to the westward of Portalegre, in South Brazil; since then it has also been found by Mr. Fox, the late British minister in Uruguay. It was introduced to English gardens by Mr. J. Tyerman, of Penlee, Tregoney, Cornwall, who raised it from seeds received from Buenos Ayres, and from freshly-gathered specimens of it sent from his garden our plate was prepared. The plant, like most other Composites, is readily increased by means of seeds, and attains a height of from 2 ft. to 4 ft. in deep rich soils, the flowers being borne in lax terminal clusters. When more plentiful, this stately and richly-coloured Groundsel promises to be a most welcome addition to hardy flowering plants. Even in its natural state it is so gorgeously beautiful that it is difficult to imagine how it may be improved, unless, indeed, double-flowered forms are obtained, or others possessing various shades of colour. The size and colour of the flowers and foliage as shown in our plate render further description of the plant unnecessary.

STRIKING CUTTINGS IN WATER.

THE success of this plan in the case of Pinks (see p. 549) suggested the usefulness of water for striking many plants. Fuchsias, Pelargoniums, Myrtles, Oleanders, and even Lapagerias, and many others have been rooted in this way. Verbenas and similar stem-rooting plants strike root more quickly in water than in soil; even the failures of rooting plants in water arise far more from faulty methods of proceeding than from any drawbacks in the material employed. The most common way of rooting cuttings in water has been to fill a glass or bottle with it; dip the cutting into the water for any handy distance, and leave it there until it is rooted. Generally the cuttings are far too deeply immersed, and often perish. Half-an-inch or so of water is sufficient, and some, to avoid excess and also as an interesting experiment, have suspended the cuttings, and have watered them by means of a wet thread led from a glass or bottle. The plan answers well for cuttings that root quickly. As the chief use of all our composts for striking cuttings is simply to provide a uniform supply of moisture, it seems possible that a little mechanical contrivance might enable us to provide that to any required amount, without risk of excess. Some water trays or troughs may yet enable us to dispense with all the labour of draining and filling pots with composts until the cuttings are rooted. By the water mode cuttings might be rooted in closely packed fifties, hundreds, or even thousands. This would effect an immense saving of labour and of space. Water might prove quicker, as well as less cumbersome than soil. But what then would come of the general belief that the pressure of the firm soil is really a factor in the formation of roots? Why, probably this, that it was merely a popular fallacy, and that all a cutting needs till it is rooted is water, air, heat, and light. It used to be thought that seeds needed light to entice them to vegetate. But it is now found that the best possible place for the rapid and healthy germination of seeds is a dark closet, ranging in temperature from 45° to 70°. Light only hinders the transformation of the seed into a plant, however essential it is to the plant afterwards. And so likewise may it be found that earths and sands hinder, rather than help, the emission of roots. Certain it is, that Nature strikes her cuttings in the air or on the earth, rather than in it; and that her chief stimulus to rooting is moisture only, without any ponderous weight of soil. To give the system a fair trial, we want pots, or pans, or trays, specially prepared for the rooting of plants in water. It has been proved in a multitude of cases to be possible, and the next step in advance may show it to be even preferable to the modes usually employed. D. T. FISH.

BEFORE the war the flowers sought after by the Parisians were all named Eugénie, Napoléon, Hortense, Mathilde, Clothilde, Morny, and Rouher, but at the Show the other day, the six names were all changed. The flowers are still beautiful nevertheless, and they improve from year to year, though the Princesse Murat has become the Duchesse Décazes, and Eugénie is transformed to Gambetta. But it is confusing when you ask for a Napoleon III. to receive a Jules Simon, or a Dufaure for a Prince Imperial, or a Naquet for a Duchesse de Mouchy.

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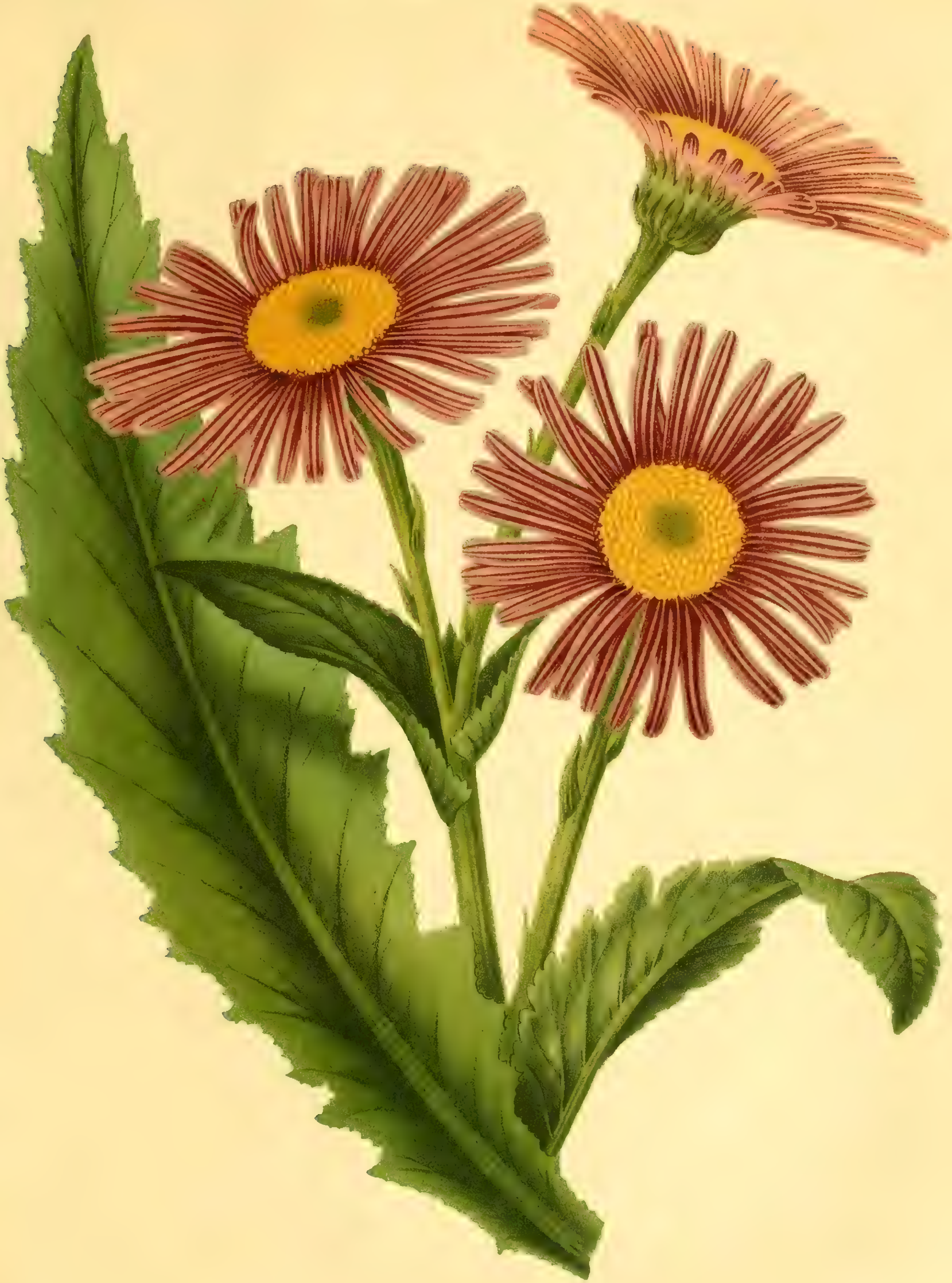


TYERMAN'S GROUNDSEL (SENECIO PULCHER)

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Vines without Fire-heat.—Where Vines are grown in plant houses and not excited into growth by more fire-heat than is required for keeping frost from the plants, they will be more than usually late this season, owing to the long continuance of cold sunless weather which we have had. In some cases the crop will only now be large enough to thin, an operation which should be attended to at once; as should also that of stopping and regulating the shoots; inattention to the latter is frequently the cause of unfruitfulness, especially when the Vines are weak. Where too much wood is left, the strength of the Vines, instead of being concentrated in the formation of that which is required for the ensuing season's crop, is uselessly divided in sustaining a quantity of superabundant shoots that have afterwards to be cut away; if, to assist root-action, it is considered advisable to let more shoots remain than are necessary to carry the number of bunches the Vines are allowed to bear, more than one shoot to each spur should not be left, otherwise the evil alluded to must occur. Where Vines are in the late condition to which I have just alluded, it will be necessary at once to push them on as fast as the other occupants of the house will permit, by regularly closing the house sufficiently early in the afternoon to shut in a considerable amount of sun-heat; if this be not done, the fruit will neither have time to ripen nor the wood have a chance of getting sufficiently matured.

Climbers and Shade.—In houses devoted to the cultivation of decorative plants, grown either for their flowers or the beauty of their leaves, the effect is much improved by the use of climbing plants trained to the rafters in the usual manner; but, elegant as these unquestionably are, and much as they contribute to hide the objectionable straight lines of the wood or ironwork, the extent to which they are allowed to cover the roof must be very limited, unless there is a disposition to sacrifice the health and appearance of every plant occupying the body of the house that requires full light in which to grow. No greater mistake can be made than allowing roof climbers an unlimited amount of room in plant houses. Indeed, in the case of amateurs who may possess only a single house, and who keep this entirely devoted to the growth of flowering plants, with perhaps a few fine-leaved ones, I would recommend the matter to be well considered before any climbers are introduced at all; for even with the most spare growers that can be so employed those that occupy the body of the house will be injured to some extent. During the middle of the day, in bright weather, the climbers will possibly do little harm, and to plants in flower they may even be an advantage by breaking the force of the sun's rays; but for every hour they are of benefit to plants underneath them, there occur a dozen in which they do serious injury, and that in proportion to the extent to which they obstruct the light. If amateurs use them in houses of the description under consideration, they should employ only the most spare growers, such as will furnish but a moderate number of pendent shoots, avoiding all strong rampant-growing kinds, for although it is easy to keep the latter within bounds by a free use of the knife, yet this work does not always receive attention, or there is a reluctance to cut away the shoots. The more light the house affords from the principle upon which it is constructed, and the favourable position in which it stands, the more roof-climbers may be allowed. During bright sunny weather in the summer months, most flowering plants will last longer in bloom if they are shaded in the middle of the day, but nothing is more common than to see this so much overdone, that the whole are seriously injured by the obstruction of light through the material employed being too thick or the use of fixed shading. Where either of these evils exist it is impossible for the plants to remain long in a satisfactory state. It should always be borne in mind that, that almost every plant which we cultivate under glass receives in its native country considerably more light than our climate affords; therefore, wherever blinds are used they should in all cases be attached to rollers, so as to be easily drawn up and down as occasion requires, and they should never be allowed to remain down when the sun does not shine upon the house. Even in the case of Ferns (with the exception of the Filmy species and a few that exist naturally in shady situations), they thrive much better fully exposed to light when the sun is not upon them.

Fuchsias.—Plants of these that have been flowering for some time will be benefited by manure-water, but they must not have it applied too strong. All seed-pods should be removed as soon as the flowers fall off; when these are allowed to remain until they are fully matured the strength of the plants is taxed to a much greater extent than in the production of flowers. Such as are intended for late flowering should have their flowers picked off as soon as they are formed.

Lilies.—The earliest amongst these, such as L. auratum and L. eximium, will now be coming on fast, and should be assisted with manure-water. The soil must never be allowed to get dry, especially after it is filled with roots, or the bottom leaves are sure to become yellow and fall off, and when several bulbs are grown in a pot so as to exhaust the soil the lower leaves will suffer even if watering be well attended to unless stimulants are used. In the case of L. auratum the varieties differ greatly, both in habit and time of flowering; in a dozen bulbs, taken promiscuously as imported, there will generally be a difference of one-third in the height to which they will grow, and in the time of blooming of at least a couple of months, which at once points to the necessity of growing them in separate pots. If there should be the slightest appearance of greenfly upon them this should be at once removed, or it will destroy the leaves. They should be neatly tied to sticks thin but sufficiently strong to support them; for Lilies, Willows with the bark on, proportionately stout to the height of the plants, are equally good, and look as well as painted deal. Turn the plants frequently, so as to prevent their being drawn to one side. Late flowering kinds, such as the different varieties of L. lancifolium, should be set in a thoroughly light open situation, where they will not become drawn. Syringing overhead two or three times a week will keep them clean, without which it is not possible for the foliage to remain green and healthy until the flowering is over. On this not only does the good appearance of the plants depend, but it has also much to do with the strength of the bulbs for another year, as the longer the leaves remain fresh the more strength will be stored up in them.

Petunias, especially the double kinds, of which there are now so many fine dwarf-growing varieties, make most useful pot plants, either for greenhouse decoration or for standing in room windows. Cuttings of these that were struck in the spring should now be moved into 6-in. or 7-in. pots, have their points pinched out, and be neatly tied to a few small sticks; they will succeed well in ordinary loam, to which a little leaf-mould and rotten manure should be added, and a sprinkling of sand: place them near the light so as to keep them dwarf and bushy, as on this their flowering capabilities will much depend.

Camellias that flowered about Christmas, and which after blooming were at once placed in heat, will by this time have matured their growth and formed flower-buds of a considerable size; the plants should not be allowed to remain too long in heat, or they may get too forward; but now is the time when their season of blooming may be regulated—and not afterwards by submitting them to heat as is often attempted—which almost invariably ends in the buds falling off before they expand. As soon as the largest buds acquire the size of Haws, the plants should be placed in a cool house shaded from the full sun, but, where there is plenty of air: they will not require so much water as during the growing season: on no account must the soil be allowed to get dry, or loss of buds will be the result.

Kitchen Garden.—Continue to plant out winter Broccoli, as the plants from the different sowings get large enough for the purpose; it is best to grow a moderate number from sowings made at different times, as by this means a continuous supply is much more likely to be kept up than it otherwise would be. Keep the hoe going during favourable weather, stirring the soil as deeply as the roots of the different crops will permit without interfering with them; do not use the rake amongst vegetable crops with a view, as is often done, of giving the ground a trim appearance—it is much better in the rougher state, as left by the hoe; under such conditions it does not lose moisture so fast in dry weather as it otherwise would, and, when showers fall, the water will penetrate the surface instead of running off, as it does when the ground is smooth.

Stoves.

A genial moist temperature must now be maintained by using the syringe freely among the plants after closing—keeping the pathways, the under parts of the stage, and any other available surface, well damped during the forenoon, or while the ventilators remain open. Fine-foliaged plants will now be the chief attraction in the above structures, and in order to promote a free growth they should be supplied with plenty of tepid water at the roots, shifting them on from time to time as they fill their pots and require more room.

Caladiums and others of that class do best in loose, rough soil, such as fibry loam and leaf-mould, or peat and the former, so that their roots can ramble freely and water pass readily through. To render these of use for conservatory or room decoration, they must be gradually inured to more air and a cooler temperature than what is necessary to grow them in, otherwise their leaves soon drop or curl, giving them a shabby appearance and spoiling their beauty for the remainder of the season. Few plants are more effective for the embellishment of dinner-tables or similar purposes than dwarf, sturdy Caladiums; and, where plants are much in request for that kind of decoration during the summer months, a good selection should be kept in suitable-sized pots, available for service at any time. If subjected to plenty of light, their stems and leaves will become much stouter and stronger, with the colours brighter and more fully developed than when shade is employed beyond what is absolutely necessary to keep them from burning.

Marantas and Alocasias delight in shade and plenty of atmospheric moisture, which can be secured by placing them on inverted pots over tanks, that the bottoms of those in which they are growing may stand an inch or two clear of the water. In such positions they are very easy to cultivate, and rarely show any disfigurement round the edges of the leaves, as they sometimes do when there are sudden fluctuations in the amount of humidity immediately surrounding them. Young plants of Alocasia metallica, A. Lowi, and others of that type, must be kept well above the rim of the pot when shifting them into others of larger size, which operation should be performed at once if it be desired to grow them on as quickly as possible. Well drain by the use of plenty of crocks, and put in a mixture of rough, fibry peat and Sphagnum, packing it closely and securely round the collars of the plants, taking care not to injure the points of the large fleshy roots protruding through the old ball. When packing the fresh material about them, shake in a little silver sand, and place a few pieces of charcoal amongst the peat and Sphagnum to ensure its porosity; after which water freely during the remainder of the growing season. A. macrorhiza variegata requires different treatment as to soil and the way it is potted, for which purpose good fibry loam and peat, used in a rough state, is the most suitable. This, like the others, requires plenty of water while growing, and must therefore be well drained. The same conditions as to atmospheric moisture and shade necessary for the others will suit this perfectly. This variety has unfortunately a tendency to revert to the green form and lose its variegation, therefore, in making the requisite divisions for potting, only those showing the best marked leaves should be retained for growing on. Any that are already established and are now filling their pots with roots, should be assisted occasionally by giving them weak manure-water, which will add considerably to the size of the leaves and improve their appearance.

Sanchezia nobilis.—Where variegated plants are much in request for conservatory decoration during the summer months, no better or more striking plant can be had than Sanchezia nobilis, which is alike remarkable for the size of its leaves and the rich yellow bands of colour traversing each side of the principal veins. From the great substance of the foliage and the comparatively hardy nature of the plant over most other stove subjects, it stands well in the cool, dry air of a conservatory, and in positions where it would be quite unsafe to place Crotons, with many of which in point of leaf-markings the Sanchezia will compare most favourably. Cuttings put in now under hand-lights in any shady part of the stove, will soon root, and, if grown freely on during the summer, make fine useful plants for next season. To get the leaves of large size, they must be potted in good, fibry loam and leaf-soil, with sufficient sand to keep the whole porous and open, that water, of which they take liberal supplies when growing, may pass freely through. Any about to be removed for decorative purposes should first be placed in a cooler and more airy house than that in which they have been grown, so as to harden them gradually and prepare them for the change. In order to have their leaves in the best possible condition, they should be frequently sponged, to remove dust or other deposit that may have gathered on them from the impurity of water used in syringing.

Crotons.—Plenty of light, heat, and moisture, are the conditions most favourable to the growth of these, and to secure which the plants should be placed well up to the glass and kept freely syringed both morning and afternoon, shutting up early so as to close in the sun-heat, by which means fires may now, in most cases, be entirely dispensed with. With the rapid progress these are now making liberal supplies of water at the roots will likewise be necessary, especially to those that are confined in small pots, and to such weak liquid manure will be of great benefit. Any just struck, and others more advanced, that it may be desirable to grow on faster than the general stock, and to which colour for the present is of no consequence, may be subjected to more shade, which, if accompanied with an increase of heat and atmospheric moisture, will have the desired effect. Crotons are well adapted for table decoration, especially the long narrow-leaved varieties, such as C. Weismanni, C. spirale, C. interruptum, and others of that class grown with single stems and confined to 6-in. pots, which sizes are generally as large as can be accommodated on the limited space of a dining-table. Plants from 18 in. to 24 in. high are mostly preferred for this purpose, and to get these furnished with healthy, full-sized leaves down to the pot, the leading points of strong shoots should be taken off and struck under close hand-lights or large bell-glasses, which they will soon do if plunged in brisk bottom-heat. As soon as they attain the requisite height nip out the leading shoots close to the axil of the top leaf and carefully disbud any that start up the stem the moment they show themselves, by which means the whole strength of the plant is forced into the leaves, causing them to attain an unusual state of development, as well as enabling the grower to keep the plants in the same serviceable state for a great length of time. In order to develop their rich colours to the fullest extent the plants should be placed where they can have plenty of light and be well syringed to keep down red spider, which, if allowed to attack them ever so slightly would cause such a disfigurement as to render them unfit for the purpose required.

Dracænas.—These most accommodating plants may at once be made use of for decorating conservatories or other cool structures, provided they have been prepared for a week or two, by being gradually hardened in a drier and more airy house than that in which they have been growing. There are few, if any stove subjects that will endure the sudden changes of temperature, or anything like the amount of hard usage that Dracænas will, and now that we have so many of noble aspect affording such a wide range of colour in their leaf-markings, no establishment, where ornamental-foliaged plants are in request, either for summer or winter decorations, should be without a good stock of the best and most distinct kinds. Where they are required for special purposes, such as placing in vases in halls, rooms, &c., and have consequently to be confined to small pots, plenty of water must be supplied at the roots, otherwise the tips of the leaves will die off, thus giving the plants a shabby appearance. Any that are now in rooms or other positions where dust is likely to settle on them, should have their leaves carefully sponged occasionally, which will add much to the brightness and beauty of the plants, and help to preserve them in health. Small growing stock must be well attended to, and shifted on as they require more pot room, keeping them in a close moist atmosphere to push them on as fast as possible. In order to get as much colour in the leaves as the different varieties are capable of attaining, those likely to be required for table decoration should be placed where they can obtain plenty of light, without which the beautiful markings characteristic of them are not fully brought out.

Anthuriums are now making their young leaves, and as much of next season's success in blooming depends on the growth the plants make at the present time, no pains should be spared in giving them the necessary attention. Moderate shade, a close, moist heat, and plenty of water at the roots are the conditions necessary for success in growing this perhaps most useful of all stove-flowering plants. See that the old leaves do not overlap the young ones now emerging, and come crippled and deformed, as every fully developed leaf the plant can be made to produce adds to its strength and capacity for blooming. Sponge carefully the foliage that is sufficiently mature to be handled in that way, so as to remove any scale or deposit, and keep them in a clean, healthy state.

Celosias and Cockscombs.—Young-growing plants of these should be potted in rich soil, and plunged in slight bottom-heat in pits or frames, where they can be kept well up to the glass, to prevent them from becoming drawn. Shut up early and syringe freely, so as to keep down red spider, as when the leaves of either of these become attacked by this pest the beauty of the plants soon disappear.—J. SHEPPARD, *Woolverstone Park.*

Orchids.

Many Dendrobiums are now in full growth; they should therefore be placed in a warm, moist, airy house, and be kept well supplied with water until the pseudo-bulbs are fully developed. Most of them are true epiphytes, having a pendulous habit, and in making their new growth the middle leaves are arranged so as to throw off any water that may by chance fall on them; even the young growth of those varieties whose pseudo-bulbs when mature assume a more erect habit exhibit this tendency. As the young growths of most Orchids are tender and impatient of water, it is bad practice to tie them in an upright position, thereby depriving them of the benefit of their natural habit of growth, and running the risk of losing the heart, in which case the plant would have to start new growth, probably too late to come to maturity; if the plants are doing well and making sturdy growth they will need little or no support until the pseudo-bulbs have filled out, when, if tall-growing varieties, they may be trained into the required forms; if they are making fragile growth it shows that they are either in too warm or too close a place, and such plants should have the young growths looped up to prevent them from breaking, and should be placed in a more airy part of the house as near to the glass as possible. The Masdevallias, which should be in the cool Odontoglossum-house, must be liberally supplied with water, and any of the plants which have not Sphagnum Moss growing on the tops of the pots should have some of the old material removed, and its place supplied by filmy peat and living Sphagnum, it being important that the Moss should be in a growing state; air should be freely admitted day and night. Look carefully after insect-pests in all the houses, clean the plants, alter their relative positions, and rearrange them.—James O'Brien.

Kitchen Garden.

Various opinions are held as to the utility of earthing-up vegetable crops, and if "doctors differ, who shall decide?" As regards myself I have not the least doubt that the practice is beneficial to certain crops and injurious to others. I would therefore advise that each use his own judgment in the matter, and earth-up or not, as may be thought best. These remarks are suggested through the effect of the wind upon our Brussels Sprouts, and which, though planted in shallow trenches and filled in to the general ground level as they grow, now require to be either staked or earthed-up, and for obvious reasons we prefer the latter course. Some kinds of Potatoes also require earthing-up, others will succeed without it, notably the short-topped kinds, but the taller-growing sorts require a good ridge of soil to support the haulms; rain is just as effective, if not more so, when it descends to the roots between the ridges. In favourable weather keep the hoe at work amongst all growing crops; such labour is never lost, but acts beneficially in two ways—first, by assisting the growth of the crops; and, secondly, by preventing the growth of weeds. If all seedlings, such as Onions, Carrots, Parsnips, &c., have not yet been finally thinned out, they must be attended to at once, or serious injury will accrue to the permanent crops, and though such work is more expeditiously and better accomplished in showery weather, if there should be no rain water should be applied artificially, and the task completed forthwith. Proceed with the planting of the various kinds of winter greens as the ground becomes vacant—Coleworts and Savoys are especially acceptable in autumn and early winter, and should therefore be planted in quantity; another sowing of the former should now be made, and these will produce a supply for use in the depth of winter. If the weather continue dry Cauliflowers will require liberal watering, and each alternate watering should be with diluted sewage, or manure-water of some kind; Lettuce, also, if desired large and crisp, should have plenty of water; Celery, too, as soon as the plants are well established, will be all the better for it, though if mulched at planting time none yet will be required. Plant out the later batches of Celery, in doing which any side-shoots or suckers should be taken off, but however long the plants may be, do not cut off the tops when the plants have become drawn: such a practice is to be thoroughly condemned. If Peas were sown in shallow trenches, as recommended some weeks ago, they may now be filled up to the ground level and staked, at the same time mulching them either with stable litter or short grass. A sowing should now be made of both early and late kinds; the best early is William I., and the best late sorts are Veitch's Perfection, British Queen, and Ne Plus Ultra. As soon as Peas are plentiful, cease cutting Asparagus, for to continue cutting it much longer will prove disastrous to next year's supply. Clear the beds or plantations of weeds, and then give a dressing of salt or guano, or irrigate with sewage; this vegetable is a gross feeder, and quite fails to thrive satisfactorily on anything like poor land. Remove the flower or seed stems from Seakale, Rhubarb, Sorrel, and Horse Radish; such operations may seem of but trifling import, but their removal conduces to the strength of the plants in the way most desirable. The weaker stems of Globe Artichokes should also be thinned out; the finer produce of those left will more than compensate for the smaller number of heads; indeed, if we could but apply this rule (viz., thinning) to every kind of crop, we should have better and finer produce, and not at such irregular intervals as sometimes occurs. Keep up the desired supply of Spinach by sowing a small quantity fortnightly. Top Broad Beans, and sow once more if there be a demand for them. Stake and pinch out the points of Runner Beans, and sow a good breadth of Dwarf French Beans—the best kind yet introduced is Canadian Wonder. Vegetable Marrows, Ridge Cucumbers, Tomatoes, and Chilies should have unremitting attention in assisting and forwarding growth, for our longest growing season is far too short for their well-being.—W. Wildsmith, *Heckfield.*

Temple Gardens.—The gardens of the Inner Temple are, by permission of the Benchers, thrown open to the public between the hours of six and eight every evening.

THE FRUIT GARDEN.

APPLE NOMENCLATURE.

The efforts made to rectify the nomenclature of Apples by Downing and others have been truly valuable, and yet the subject is but in its infancy. I shall, in my references to works upon fruit-growing, rely mainly upon Mr. Downing's large work of 1870. I do this because no other author has seemed to have the courage to grapple with this subject to the extent that he has done. As an insight into what we have to do in the direction of a correct nomenclature, I find that twenty-nine varieties of Apples have as many as 370 names, averaging thirteen to each. I also present another embarrassing feature as regards correct nomenclature, viz., the almost countless number of times the word "Pippin" is used as being descriptive of distinct varieties. I find this meaningless word, when applied to the Apple, used no fewer than 124 times in the work already referred to, as descriptive and distinctive of different varieties, and in eighty-three instances used as a synonym of other varieties; altogether it is used 207 times as a distinctive name. Well might the President of the Pomological Congress, at the meeting at Philadelphia, in 1869, express a hope that the word Pippin might be dropped from our catalogue. The words Bellefleur, Pearmain, Romanite, and Spitzenberg, with some others of like import, are calculated to and do frequently mislead persons seeking to grow fruit. Bellefleur means beautiful flower, and the Yellow Bellefleur, which is presumed to be the type of all the Apples bearing this name, when in full bloom, is a sight most beautiful to look upon. Its blossoms are very large and white, presenting an object of special attraction, and yet in most instances a large proportion of these flowers are abortive. The other Bellefleurs are so named more from their resemblance in shape to the Yellow kind than to their bloom—the very point where the name originated; hence the name is embarrassing and confusing. Pearmain, as used to designate a particular variety of the Apple, is not satisfactory, and tends to confuse the nomenclature. Pearmain must mean either Pear-shaped or Pear-flavoured. This point has never, to our knowledge, been settled. Most Apples bearing this name are either round or conical, with the large end at the stem, while most Pears have the small end at the stem. The terms Romanite and Spitzenberg are equally bewildering as a distinctive name when applied to the Apple. True, many of these terms, perhaps all of them, are preceded by an adjective, thus converting these terms into family or classified names. But even in this view of the case they fail as signally as when used to designate special varieties. A correct nomenclature, I contend, should proceed upon the principle of making the name expressive of something belonging to the specimen—either the place of its origin or the originator, the time of ripening, the size, shape, colour, or quality of the fruit. Some two or three of these should be grouped together in such way as to make the name express as much of these characteristics as can conveniently be thrown together without making the name cumbersome. There is still one other phase of this subject that is more confusing than any other, and that is, the using the original name and synonym interchangeably; sometimes using the original for the synonym, and at other times using the synonym for the true name. A few examples of the incautious use of these terms will show how very embarrassing the practice is to even those who are well acquainted with fruits. Let us take the Early Harvest. Here the Tart Bough is given as a synonym, or as the same Apple under another name. Then the Tart Bough should not be described as a distinct variety: and yet it is so described. The Tart Bough is also given as a synonym of Summer Pippin. If then the Tart Bough be the same as Early Harvest and also as Summer Pippin, then the Early Harvest, Tart Bough, and Summer Pippin are but the same Apple, the Early Harvest; yet we have them described as three distinct Apples. We have the Early Harvest and the Summer Pippin, and they are quite distinct in size and colour and time of ripening. How confusing this to one who is seeking to procure certain varieties to plant an orchard! The Buckingham, again, is a leading Apple in the south and west, but is sought after and procured under a multiplicity of names.

Having been taken from Buckingham County, in Virginia, to North Carolina, and there having received the name of Buckingham, from the county from which it was taken, it has become through the south and west pretty well established by this name; yet Queen is the original name by which it was known in Virginia during the latter part of the last century. In the extreme south it is known by the name of Equinetlee as the original name, and Buckingham and Kentucky Queen as synonyms, together with various other local names. Fall Queen is one of the synonyms by which it was known in Kentucky for many years, and if Fall Queen and Buckingham be the same, as is admitted by the books, then the Fall Queen cannot be properly used as synonym, or as the original for any other variety; and yet there is an Apple described as originating in or near St. Louis some years ago, bearing the name of Fall Queen. It has for its synonyms, Gros Pommier, Haas, Hoss, and Horse. Now if the Fall Queen be the same as Buckingham, then Gros Pommier, Haas, Hoss, and Horse are the same. But the Fall Queen or Buckingham is known to have originated in Virginia, and the Fall Queen, as described in "Downing's Selected Fruits," is known to have originated in St. Louis County, Mo. If these two Fall Queens could possibly be the same Apple, then the Gross Pommier, the Haas, the Hoss, the Horse, and the Buckingham would all be the same. The true Fall Queen is a large red Apple, ripening in November and December, while the Horse is a large yellow Apple, ripening in August—as different from the Queen as two Apples can well be. Any one ordering the Horse Apple supposing he would get the Fall Queen would be quite disappointed. This also goes to show how important it is not to use original names and synonyms interchangeably. The Golden Sweet is given as the original name of a fine summer sweet Apple, ripening in the west in July; Orange Sweet is given as the synonym, and yet the one ripens in July and the other in September on the same ground; Northern Sweet is given as an original name, and Golden Sweet as a synonym; Munson Sweet is given as an original name and Orange Sweet as a synonym. Hence Golden Sweet, Orange Sweet, Munson Sweet, and Northern Sweet, must be one and the same Apple, if the synonym and the original be the same. There would then be the very same Apple ripening the one in July, one in September, one in September and October, and the other from October to February. By their synonyms all are made to be the same Apple, while they are described as four separate and distinct varieties. This is enough to confuse the most watchful of us all. Further the Ortley, a fine old Apple, has for some of its synonyms, the White Pippin, Greasy Pippin, Warren Pippin, and Vandyne. Now if these be really synonyms, they are each nothing more or less than the Ortley itself under different names. But each of these synonyms, excepting the Greasy Pippin, is described as an original and distinct variety. The Greasy Pippin being a synonym of Lowell makes Lowell and Ortley the same. They are, however, quite distinct, the one ripening on the same ground in September, the other keeping all the winter; the one having a close, the other an open core. Whenever we shall have left off describing synonyms as original names, we shall have made a long stride towards having a much purer momenclature than we now have. I will give but one other case of this confounding of original names, and using them interchangeably with synonyms, viz., that of the Primate. The Tart Bough was given as a synonym of Early Harvest, and is also given as a synonym of Primate, a fruit so distinct in tree and fruit as to cause surprise at being called the same. The Powers is also given as a synonym of Primate; the one is supposed to have originated in New Jersey, the other in Ohio; the one an old variety, while the other is comparatively new. The Primate ripens in August, the Powers in October. Here then we have the Early Harvest ripening in July, the Primate ripening in August, and the Powers ripening in October and November, described as one and the same Apple, and also as distinct varieties. This is making confusion doubly confounded. We think no one can but see the great impropriety of thus confounding the use of originals and synonyms. Let us now direct attention to a few names of Apples which really mean anything or nothing, as one chooses to make them; such, for instance, as Early Ripe. There are hundreds of Apples that will answer this description, hence it is no guide to the recognizing of any one in distinction from another. Fourth of July is another of those meaningless names; the fourth of July comes at the same time whether the Apple is ripe or not; hence both of these Apples should have a prefix or an affix to make the name intelligible.

There is another phase of this evil in nomenclature which we wish to present, and that is, that some of the State and local societies assume the right to give new names to old varieties whose names, to them, are not known. I have only space to notice a few cases. The first is that of our own State Society calling a fine winter Apple the Kansas Keeper, when it was known to be some old variety, but the kind not recognised. This Apple was obtained from the Ham Bros.' Nursery, and of course were grafted trees, consequently could not have originated in Kansas, in 1855. The next case is that of the Eastern Iowa Society. This Society has named an Apple the Iowa Blush, the trees of which are known to have been obtained from Dayton, Ohio, more than twenty years ago, under the name of Sweet Bellefleur. While it is evident that the trees did not produce fruit true to name, it is equally true that the trees did not originate in Iowa. The name Iowa Blush leads to the declaration that the trees were raised from seed in Iowa. This is shown to be delusive. This Iowa Blush will no doubt turn out to be some known variety. The next case of this kind we find in Virginia, where the celebrated Newtown Pippin is called Albemarle Pippin.

Let us now point out what we believe would be a remedy for such evils. Let the National Society appoint a committee, whose duty it shall be to revise and fix upon the proper nomenclature of our leading Apples, and report their findings to the next session of the Society for adoption or amendment. When this is done, let the Society cause a circular to be sent to all the State societies, requesting them to conform their several catalogues to the National in regard to its nomenclature; requesting also that the State societies make the same request of the county and local societies to do the same, and for these last to urge upon nurserymen to make the same conformity; and in this way I think the work will be done. This system once fairly inaugurated will, I think, have a most desirable result, which will be to have a uniform catalogue of the original names, with the proper synonyms attached thereto. Whenever each nurseryman shall conform his catalogue to the National catalogue having the original names at the top of his description in capitals, with the proper synonyms in italics, immediately below the proper name, there can be no difficulty in knowing at a glance whether or not he has the variety called for. Under an arrangement of this sort, fruit-growing will become a general business in those portions of country adapted to it, in consequence, mainly, of a universal confidence growing out of this general intelligence produced by a uniform nomenclature.—J. Howsley, in the American Pomological Society's Proceedings.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Blister on Peach Leaves.—This is doubtless caused by the piercing east winds which we have been experiencing; the flow of sap gets checked and put out of its usual channel. Some leaves, therefore, have more than their share of it, and functional derangement is the result.—H. M.

Hard Rusty Strawberries.—(see p. 539) Hard rusty fruits often occur on the later forced plants, and are caused by exposure to bright sunshine and a high temperature. If plants be shaded from the fierce rays of the sun, or if they be turned away from the sun so that the pot shades the fruit, and the house sprinkled on hot days to keep the air cool, rust will not be troublesome. Early fruit is seldom affected by it.—J. S. W.]

Ants Injurious to Peaches and Nectarines.—We have a south wall against which are planted several Peach and Nectarine trees, and for the last three or four years they have been infested with ants in vast numbers; the leaves curl, discolour, and fall, and the fruit is small and ripens imperfectly. Many so-called remedies have been tried, but unsuccessfully. Can any of your correspondents who may have experienced similar trouble aid us by naming a cure?—Winchmore.

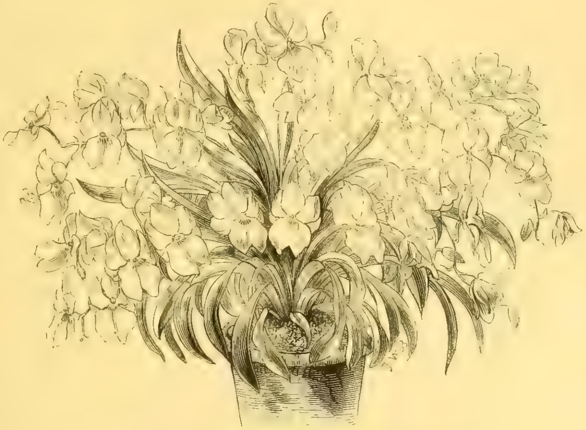
Rust on Grapes.—I consider that rust is caused nine times out of ten through carelessness when thinning. Young men, when employed in thinning Grapes, are apt to touch one bunch with the head while working at another, and every berry with which the hair comes in contact is sure to rust. Rust arises from other causes, such as steam from hot-water pipes; but hair-rubbing I have proved will produce it. I do not think it occurs when Grapes are in bloom, but when the berries are swelling.—Usk.

THE INDOOR GARDEN.

GREAT ROSY-FLOWERED ODONTOGLOSSUM.

(ODONTOGLOSSUM VEXILLARIUM.)

At the last exhibition of the Royal Horticultural Society, Mr. Richards, gardener to Baron Rothschild, at Gunnersbury, sent two of the finest examples of this species ever seen in English gardens—or, it might be added, in Europe—and to which a gold medal was awarded. These specimens bore thirty-six and forty-two flowers respectively; of the largest plant we made the accompanying sketch, which will give some idea of its floriferous character when skilfully grown. The fresh, vigorous condition of these plants—foliage as well as flowers—was in every way remarkable. It may be worthy of mention that case after case of this species, and also of O. Warscewiczi, have been sent to this country with their contents either dead or dying. These fine plants from Gunnersbury therefore prove that though a plant may travel badly, yet it may not be difficult to cultivate when once obtained in a living state. The plant, of which the annexed is a representation, bore very delicate whitish flowers, softly suffused with rose, while an even more robust plant of the large deep-rosy-flowered variety bore four spikes, on which there were in all thirty-six flowers, and all these were the produce of one pseudobulb. An importation of this plant in good condition has just been made by Mr. W. Bull, a fortunate circumstance, considering it is so handsome and so amenable to cultivation. B.



Specimen of Odontoglossum vexillarium grown at Gunnersbury.

BIGNONIAS.

The various species of these plants that require a higher temperature than that of an ordinary greenhouse, are mostly strong-growing evergreen climbers, suitable for decorating the roofs of large stoves or warm conservatories. They belong to a somewhat numerous family, but only a limited number can be recommended for general cultivation, many being of such a rampant habit as to render them unfit for growing with other plants through the tendency they have to outgrow and over-shade those that are near them. Most of the species usually cultivated should not be planted in a house where a very high temperature is kept up, as the heat and necessarily accompanying moisture render them unmanageable under such conditions, inducing growth to an extent that precludes a disposition to bloom freely. The flowers are produced in panicles, generally during the summer season. They are very effective, especially when the plants are allowed a moderate amount of freedom, not keeping them too closely tied in, but letting them hang in a wavy, natural manner. One point should be especially observed in their cultivation, as also in other subjects of a similar free habit, that whatever cutting-in becomes necessary during the growing season to keep them in bounds, should be performed with judgment and with due regard to their flowering; this will be best effected by a total removal of such portion of the shoots as is found to be necessary, but not a general shortening of the whole. Where this is done the effect generally will be to stop blooming altogether, or to limit the extension of growth in such a way as to prevent the production of anything above a meagre display of flowers. So far as practicable, it is better to prune after the blooming season is over, as then the flowering shoots are not so much interfered with.

Bignonias may be propagated in different ways—by root-cuttings, layering the shoots, or by cuttings made of young shoots. When they are increased by layers, shoots should be selected that have sprung from near the collar of a plant, operating at a time when the wood is fairly matured. Procure some 6-in. pots, which drain and fill with three parts peat to one of sand, pressing it down firmly into the pots; place these on the surface of the border in which the plant is growing, bring the shoots down to the pots, make a slit in the wood at the under side of the shoots, the knife entering just at the lower side of a joint, and passing upwards longitudinally through it for about an inch. A tongue-shaped piece is thus formed, composed of about half the substance of the shoot, which should be bent down and secured by small hooked sticks in the pot where the incision has been made, covering it about an inch deep in the soil, which must be kept watered. In this position it should remain until well rooted, after which it can be severed immediately below the point where rooted. When root-cuttings are used, pieces about the thickness of a quill should be taken off existing plants early in the spring, before growth has commenced, and cut into bits about an inch in length, inserting them singly in thumb pots in a mixture of two-thirds peat to one of sand, with half an inch of sand on the surface, leaving the thickest ends of the cuttings just a little above the sand, placing them in a temperature of 65° or 70° during the night, and a few degrees higher during the day. In a few weeks shoots will be formed from near the tops of the cuttings, which will also soon begin to make fibrous roots. Treat them afterwards as with plants grown from cuttings made from the shoots, giving them larger pots as required. When these plants are increased by cuttings made from the young wood in the spring, shoots should be chosen that are not too hard, or, in the opposite extreme, too soft and watery. The former will be slow in rooting and difficult to make grow freely; the latter will most likely damp off. Select those that are moderate in strength, and if they can be taken off with a heel at their junction with the old wood, they will be much more likely to succeed. Pot them singly in small pots in sand, confine under a propagating glass in a brisk heat, give moisture and shade when rooted. Gradually inure them to the full air of the house. After they have fairly commenced to grow, give them pots 3 in. larger. They will grow in either loam or peat, but during the first stages peat has some advantages. Use it now broken moderately fine, adding one-sixth part of sand. Place them in a light situation in a house where the night temperature is kept about 70°, and 10° higher during the day with sun-heat. Shade slightly in very bright weather, giving sufficient air to keep the growth from being drawn up weakly. By the end of July the plants will most likely have filled their pots with roots, and should be at once shifted into others 3 in. larger, at this time mixing half loam with the peat. Pot them moderately firm, and place two or three sticks in the pots, to which the shoots should be trained; it is better not to stop them, as in most cases a single shoot for a considerable height will be the most suitable form for the plants to assume. Keep them regularly trained round the sticks, not letting the shoots twine round these, or they will most likely suffer when they have to be removed. As the autumn advances give more air, discontinue shading, and reduce the temperature; but never allow them to be too dry at the roots, as, in common with other evergreen subjects, their leaves will be injured if the roots be over-dry. Winter them in a temperature of 55° or 60°. About the beginning of March they should be planted out where they are intended to remain, as they are naturally too large for pot culture, unless the pots were much larger than would be either sightly or convenient, their nature not being such as will admit of partial shaking out and removal of the soil annually, as with plants of a deciduous nature.

The border in which they are to be grown should be well drained, as the plants when they get large will require copious waterings; 6 in. of broken bricks should be placed in the bottom, allowing a sufficient egress for the water. Over the drainage put some fibrous material to prevent it getting clogged with the soil, which should consist of good loam with a little rotten-manure added, and enough sand to keep it open. This should be 12 in. or 15 in. in depth. When the plants are turned out, the roots ought to be carefully loosened from the ball and spread out, covering them about 3 in. or 4 in., pressing the soil moderately firm. The shoots should then be trained in the places they are to occupy. As the roots begin to grow freely give water when required, and as soon as the shoots have attained the height where they are desired to branch out, the points should be pinched to cause them to break, repeating the operation at intervals as they grow, until a sufficient number exist; these should be regularly trained to wires fixed for the purpose; for, if neglected (especially in their younger stages), they will twine round each other, becoming an entangled mass that will require cutting back to get the plants into shape. During the growing season they will be much benefited by a free use of the syringe every afternoon. After the allotted space is covered the plants should be cut in each season when the flowering is over, after which they will commence to make growth for the ensuing season's blooming. As the soil becomes exhausted each spring, before the roots begin to move, an inch or two should be removed from the border, replacing it with new material; and through the growing season manure-water will be a great assistance.

The following species are deserving of cultivation:—B. Chamberlaynii, a strong-growing yellow-flowered plant, from Brazil; B. olnata, a desirable variety, moderate in growth; B. venusta, an autumn-flowering, orange-coloured kind, from South America; B. argyrea violascens, a handsome species; and B. littoralis, a free-growing, handsome kind from Mexico, producing purple and red flowers.

Bignonias are not so subject to insects as some plants. Aphides will sometimes make their appearance on the young growth, but can be destroyed by fumigation. Where the syringe is freely used during the growing season, red spider will be kept down. If they become affected with scale, it must be removed by sponging, by which means and a free use of the syringe they can also be cleansed from mealy bug.

T. Baines.

Climbing Petræa (Petræa volubilis).—This old-fashioned plant is not so much grown as it ought to be; it is one of the most graceful and distinct of stove climbers, bearing long pendent racemes of lilac-purple flowers, and dark green Clerodendron or Combretum-like leaves. Perhaps, like many other useful plants, such as Embothrium coccineum, Spiræa (Exochorda) grandiflora, Ipomæa Horsfalliæ, Clematis montana, and C. (Astragene) austriaca, the difficulties of propagation have restricted its distribution. In the "Botanical Magazine" (t. 628) it is described as a native of Martinique, where it scrambles up trees to a height of 15 ft. to 20 ft. It is as distinct in its way as Bougainvillea glabra, and would soon become popular were it more generally kept in stock in our nurseries.—B.

VENTILATION OF ORCHID-HOUSES.

Proper and evenly-distributed appliances for the ingress of pure air and the egress of that which has become vitiated are essential to the healthy development of all plants cultivated under glass, but to none more than Orchids, which from their nature cannot thrive long without good ventilation. Without this they will languish and die, even in the best of houses and under the best cultural skill. Two cases fully corroborating this assertion came under my notice last year. In both instances complaint was made that the plants had not flowered nor grown satisfactorily for a considerable time, and that they had remained year after year in much the same condition in which they then were. On looking hastily round all seemed right; the heating was good—perhaps excessive; but, on closer inspection in one case, not the slightest means of ventilation was to be found, save the doors at each end of the house. In the other there were no bottom ventilators, and but few top ones, and these were said to be seldom opened. I ventured to say that want of ventilation was the chief cause of the plants doing so badly, and that they would have grown much better had they been placed in an ordinary well-ventilated greenhouse. Pure air Orchids must have, and if they cannot get that they will not succeed; excessive heat without plenty of air acts on them in much the same way as excessive cold does; it stunts them and prevents their flowering. When, therefore, any particular degree of heat is given as that proper for an Orchid-house, it should not be understood that the temperature recommended is all that is necessary; on the contrary, when the thermometer has reached that point, or a little above it, air must be admitted, and if the day be not sunny or likely to be a warm one, the heating apparatus should be kept going sufficiently to insure the maintenance of the required heat after the ventilators have been opened.

The principles on which proper ventilation depends are simple: as the air in a house becomes heated it ascends to the highest point and there ventilators should be placed to permit it to escape; the colder and heavier air from the outside should be admitted by means of ventilators placed in the brickwork of the house below the level of the pipes and near the foundation; bottom ventilation is of little use without top ventilation, and *vice versâ*; but, by carefully regulating the two together, a healthy atmosphere may be maintained without causing a draught. Air should always be given in a careful and systematic manner—not by opening a few of the ventilators wide and leaving others closed; on the contrary, on the temperature of the house attaining the required point, the ventilators should only be opened an inch or so, after which, if it be a house containing growing plants, the floors should be damped, and in an hour or so as much more ventilation should be given as the temperature inside and the atmosphere outside will permit, taking off the last portion given as early in the afternoon as can well be done, and finally shutting up according to the season of the year or the state of the weather. In foggy weather, which is fatal to Orchid blooms and very injurious to the plants themselves, or when keen east winds prevail, it is best to regulate the temperature by means of the heating apparatus, and on no account to open the ventilators; at other times, during the dull season, when the outer air is favourable, a little should be admitted in the middle of the day; and in spring, summer, and early in autumn every available means should be resorted to for the proper admission of pure air, as well as for the maintenance of the necessary heat, for on these matters the health of Orchids mainly depends. Many methods of ventilating have been from time to time invented, but, though based on correct principles, they have in some cases been found too intricate to work well. The old-fashioned sliding light, with cord, pulley, and weight for giving top air, is also objectionable, inasmuch as it entails an unnecessary amount of tear and wear to the structure; the cord and weights in the house are also unsightly, and the cord itself liable at any time to break, and allow the lights to run down, an occurrence which, happening at night or during inclement weather, would be productive of much injury to the plants. The means of giving side-ventilation by swinging sashes level with the stages is unsuitable for Orchids, for when the ventilators are open the cold air comes directly in on the plants, causing a draught in certain parts of the house and in the lower part, while underneath the stage the air remains unchanged. This mode of ventilation is a favourite one with hot-house builders. I have seen it applied to many Orchid-houses, but in building new houses the cultivator should in all cases be consulted in reference to ventilation, the arrangement of the staging, and other matters of detail. The best and simplest way of ventilating Orchid-houses of all temperatures is to have a glazed ventilator about 2 ft. in width swinging on pivots at each end of the house at the highest point; the portion of the ventilator below the pivots should be square and that above corresponding in shape to the highest point of the end of the house, so that when air is given half may swing outwards; square ventilators of a similar size opening outwards on hinges should be arranged alternately (if the house be a span roof one) at a distance of about 5 ft. or 6 ft. apart; on either side of the roof at the highest point during fine weather all the ventilators may be opened alike, but in bad weather that side should not be opened on which the cold wind blows. These ventilators if within reach should each be fitted with a flat piece of iron about an inch in width and 2 ft. in length, having holes in it at regular intervals apart into which a pin fixed into the bottom bar of the framework of the aperture fits, thus keeping the ventilator open the required distance. When arranged in this manner the movable part, when open, forms a covering over the aperture, which consequently need not be closed even during rainy weather; if out of reach such ventilators should be fitted with an iron rod fixed to a ring, in the end of which a cord, running over a pulley fixed in a similar position to the pin previously mentioned, should be fastened; by pulling the cord the ventilator is opened, and by making it fast, it is kept in the required position. The shading should be so arranged as to interfere as little as possible with the egress of the hot air. The bottom ventilators for the admission of air in houses built on a level with the ground should be just below the level of the pipes; they should be placed at distances apart of say from 4 ft. (for cool houses) to 6 ft. right round the house; each opening should be 18 in. in length and 6 in. in width (or smaller if placed at less distances apart), and they should be fitted with a grooved and slightly projecting framework, so as to allow of a cover of wood or slate running along it, and closing the aperture, after the manner of a sliding box-lid. These ventilators should be covered on the inside with coarse gauze or perforated zinc, which will check the too rapid entry of the air, and serve to keep out troublesome insects. When the ventilation of a house is arranged in this manner, and carefully regulated, the top ventilators allow the over-heated and vitiated air to escape freely, and the bottom ones admit a proportionate quantity of the pure air.

It is highly essential that air be admitted below the level of the pipes, and near the floor of the house, and to do this some difficulty is experienced in the case of sunk houses; the best plan is that in use at Broomfield; it is effected by digging holes down to the foundation on the outside of the house, at regular distances apart, openings being made in the brickwork at the bottoms of the holes, and the holes themselves bricked up a few inches above the level of the ground, so as to form small air-shafts about 18 in. in length and 6 in. in width. The opening into the house is covered with coarsely perforated zinc, and for the regulation of the air the shafts are covered with lids on the tops, which are opened as required. These lids are of wood or slate, and are quite free, not running in grooves, and consequently not quite air-tight, but the little air which passes through them when shut is beneficial rather than otherwise in a properly heated house. The chief care required by these air-shafts is to see that they do not get choked up with leaves and rubbish. Even in sunk houses, with solid earth left on which to set the plants, this kind of bottom ventilation might still be effected by laying a drain-pipe from each opening in the brickwork at the bottom of each shaft under the place on which the plants stand, the outlet being a little above the pathway. For bottom ventilation of very large houses, or those built in blocks several together, where it is difficult to get sufficient openings in connection with the outer air, a good plan is to lay a row of large drain-pipes along each side of the house immediately under the hot-water pipes, and another row up the middle beneath the walk if necessary; each row of drain-pipes should have the ends opening into the outer air, and should there be fitted with suitable covering to regulate or shut off the air as may be required; on the inner side they should have openings at regular distances apart along the house, the openings varying in size, the largest being in the middle, and each opening as it nears the end should become smaller, until the end ones close to where the air is admitted are but one-third the size of the middle one. In this way the middle of the house, where the greater facility for admission is offered, is well supplied with air, whereas if all the openings were of one size, the ends would be draughty and the middle imperfectly supplied with air. This is a good system, especially if care be taken to keep the pipes free from obstructions. These modes of ventilation may be applied to any Orchid-houses not at present properly ventilated, but in building new ones, of course, the ventilation should be carried out as the work proceeds. One other matter particularly affects the uniform distribution of air throughout a house, and that is, if the side stages be not of open work, an opening of about 2 in. should be left between them and the wall, to permit a portion of the air to circulate among the plants; in that way, the ventilators being placed below the hot water pipes, the air will have to pass over them before it reaches the plants—a point of considerable importance.

JAMES O'BRIEN.

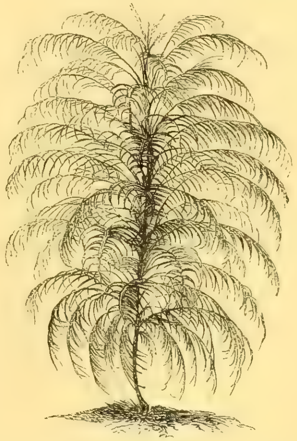
Forcing Lilium longiflorum.—This lovely Lily is, according to "The Gardeners' Magazine," the best of the whole race for forcing, and the most valuable when its forced flowers have been secured. It has many a time delighted us to see how easily we could secure an early and a vigorous bloom by putting some established plants in the Geranium-house soon after the turn of the year, and keeping them very near the glass with abundance of air. The flowers acquire a splendid development, and the plants are rarely troubled with fly or any other enemy. Plenty of light, plenty of air, plenty of water, with a little of something in it, and in due time there you are. As to the date of flowering, that will depend upon the temperature, and, as a matter of course, the temperature of a Geranium-house is quite high enough for any kind of Lilium, for these plants will not stand very much boiling or roasting. There is a cry for white flowers at Easter, and people who can obtain Callas are delighted, but everybody who is interested in decorations at that season would sooner have Lilies than aught else.

A GRACEFUL TABLE PLANT.

(SONCHUS ELEGANTISSIMUS).

THIS plant, which was lately exhibited by Messrs. E. G. Henderson, at one of the Regent's Park exhibitions, is remarkable for its soft, green, finely-cut foliage, and extremely graceful habit of growth. As a table plant it is peculiarly interesting, the leaves appearing semi-translucent under artificial light. It is easily cultivated in any warm plant-house or pit, in a compost consisting of turfy loam and leaf-mould in nearly equal proportions, with the addition of a little coarse sandstone grit to keep the whole porous. Several other varieties of Sonchus form very graceful decorative plants, and deserve a place in most gardens where slender-growing foliage plants are desired for dinner table decoration or small vases in the drawing-room or front hall.

B.



Sonchus elegantissimus.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Masdevallia Estradæ.—Can any of your contributors learned in this class of plants inform me what is the difference, if any, between this variety and M. Ionocharis, now to be seen in flower at Messrs. Veitch's, at Chelsea? Certainly a prettier gem in its way would be difficult to find; and, though not so showy as many of the tribe, its neat and very free-flowering habit render it desirable in all collections.—V.

A Gigantic Cactus.—Dr. Ernst describes, in the June number of the "Journal of Botany," a plant of Cereus Swartzi, the trunk of which he calculated measured 56 ft. in height. At 3 ft. from the ground it had a diameter of 18 in., and at about 30 ft. from the ground it divided into fourteen large branches.

The Fuchsia as a Basket Plant.—Perhaps the most suitable form of all for the Fuchsia is that of a basket plant. Walk under a tall Fuchsia, and it is impossible not to feel that the way to see Fuchsias to the best effect is to look up to them. The shoots, hanging over sides of baskets, or trained over their bottoms, are in the best position to be seen. The Fuchsia does also well in a basket. The slender habit of so many of the finer varieties admirably adapt them for such purposes. Plants for baskets require early and persistent stopping, to form dense dwarf bushes. The bottom shoots may also at times need to be tied over the sides. With a dense pendent habit established at first, there is little difficulty afterwards.—F.

THE KITCHEN GARDEN.

FRENCH ASPARAGUS BUNCHING.

Early in March last (see p. 254) we figured and described Mr. Conover's Asparagus buncher, and in contrast with it the very primitive form still in use by many Asparagus growers. The "Revue Horticole" about the same time gave engravings of four different bunchers in use in different parts of France; these we reproduce, not only because it is interesting to learn how gardening operations are performed in other countries, but because these different devices may afford some useful hints to those who may desire to make something of the kind for their own use. In France large areas are devoted to the field culture of Asparagus, and there are also immense establishments for forcing it under glass; these two sources are supplemented by that put up in cans, of which large quantities are preserved for home use and for exportation. From one or another of these those who can afford it can enjoy Asparagus all the year round. The number of these bunchers at home and abroad show that the necessity for putting up Asparagus in neat bunches is generally recognized; if any one doubts that careful bunching pays, let him send to market loose shoots, or even bunches carelessly put up, with uneven ends and buts, and he will be fully convinced that when he has raised the crop he has accomplished only one step towards turning it into money. In regard to the size of the bunches, that differs with the season; the length is 8 in. or 9 in., and the diameter through the centre from 4 in. for early Asparagus, to 5 in. for that which comes in later. In the French markets where articles are often purchased in small quantities, the large bunches are divided to make half and quarter bunches, and the marketmen have bunchers for doing this. Fig. 1 shows the oldest of the French bunchers; it consists of two pairs of wooden scissors with curved blades; to each short arm of one of these is fixed a wooden rod, which passes through a hole in the corresponding arm of the other, allowing the two to be placed at the desired distance apart; the scissor-like ends may be opened or closed, and held at the proper point by a string tied across the rods. The apparatus at fig. 2 is called the "Normand Buncher," and is in very common use. It consists of two boards each with a U-shaped opening; the rear one has a thin piece across it to keep the ends of the shoots even, and near the bottom four square rods, upon which the front piece slides; a part of the front piece has a thin board over it to add strength. In figs. 3 and 4 are shown the "Sartrouville Buncher," both empty and filled; its construction is shown so clearly that explanation is not needed; none of the parts are movable, the peculiarity about this is the back board, so contrived as to bring the tips of the shoots close together; when the frame is nearly full, the shoots are passed in through the wedge-shaped opening above. Figs. 5 and 6 show closed and open a more complicated affair; it is the form sold by the implement dealers in France, and known as the "Argenteuil Buncher." The board E slides in grooves in the frame D, D, and carries the two pieces B and C; the end A is like that in the preceding, arranged to draw down the bunch. The cross-piece F is merely for strength, and the circles near E indicate that underneath are cavities for the ends of the fingers, to facilitate the pulling out of the board. From among these Asparagus bunchers, and those previously figured, our readers should be able to fix upon one which will do the work neatly, and what is also important where there is a large crop, quickly. To have the Asparagus appear in the market in the best possible manner, there are several precautions to be observed. It is customary for the cutter to lay the shoots in handfuls along the rows; these should not be allowed to remain long, as they will curl and wilt; in handling keep the heads all one way. As soon as possible after cutting, wash, assort, and bunch; at least two sizes should be made, and the bunches should be of even

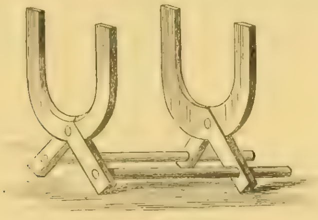


Fig. 1.—Old French Buncher.

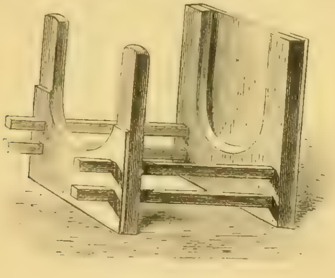


Fig. 2.—Normand Buncher.

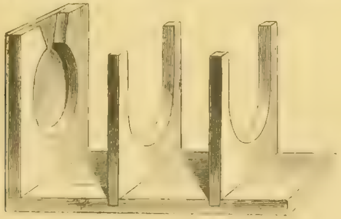


Fig. 3.—Sartrouville Buncher (empty).

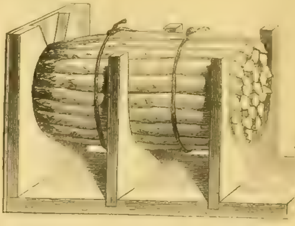


Fig. 4.—Sartrouville Buncher (filled).

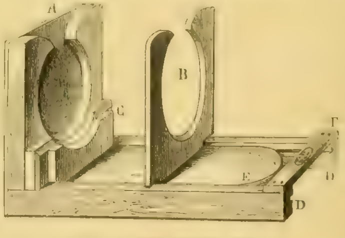


Fig. 5.—Argenteuil Buncher (closed).

quality all through. Take pains to have the heads very even, and cut the buts neatly and square. Tie the bunches very tightly, or they will become loose in transport. The fault with all the French bunchers is that they have no means of pressing the shoots, a difficulty overcome in Mr. Conover's buncher, which allows the bunch to be held under strong pressure until the ties are put on. Use flat ties; strong bast is generally used, and probably Cuba bast would be better than the native or Russia; fig. 4 shows the usual method of tying in France where Willow twigs are employed. When made up the bunches should always stand upright; if laid down they will become crooked. If obliged to keep the Asparagus for a day or two before sending it to market, place the bunches in a tub, in an inch or so of water, and protect them from light; keep them in a cellar.—"American Agriculturist."

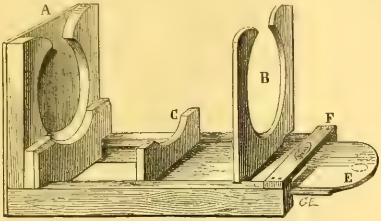
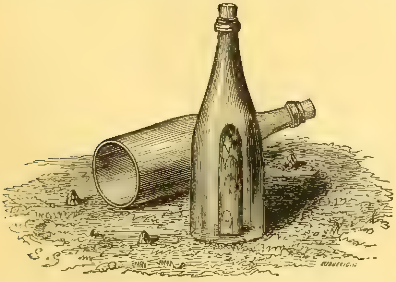


Fig. 6.—Argenteuil Buncher (open).

Advantage of Deep Surface-stirrings.—Heavy land works most unkindly—to use a local term—and unless the surface be freely stirred in a season like the present, crops can hardly be expected to progress satisfactorily. Owing to the heavy rains which we have had, the surface, where not well loosened up, is almost impervious, and by-and-by will crack into deep fissures, and let out every particle of moisture. The obvious remedy in the case of such conditions is to stir the surface freely when dry with a light steel fork. The hoe, although a most useful implement, will hardly do such work well this year, especially among Potatoes, or any other crop that may require earthing-up. And all such crops as Peas and Cauliflowers should be mulched early.—E. Hobday, *Ramsey Abbey.*

A METHOD OF FORCING ASPARAGUS.

The method of forcing Asparagus introduced by M. Jacquisson, of Chalons, a well-known horticulturist, is so simple that the annexed figure is almost sufficient to explain the matter. It consists of an ordinary wine bottle with the bottom cut off. These bottomless bottles when well corked are placed over the Asparagus head just as it is beginning to rise above the ground. The Asparagus being thus protected not only grows fast but is so tender that the whole of it may be eaten. The air being kept from it, the development of the woody fibre of the plant is retarded, while that of the cellular tissue is accelerated. Cultivated in this way Asparagus is as expeditiously cut as when grown in the ordinary manner, sufficient light passing through the bottle to show when the heads are ready for gathering. In addition to this the small amount of light which passes through the bottle gives the Asparagus a rosy tinge which greatly improves its appearance . At page 515 of the present volume of The Garden, directions have been given for cutting off the bottoms of bottles, or bottomless bottles, the refuse of glass works, are not difficult to obtain.



COTTAGERS' LEEKS.

Leeks, as stated by Mr. Groom (see p. 520), are not popular in East Anglia. I have many times recommended their culture, and offered plants of them to cottagers, but without any good result. In many other parts of the country, however, Leeks are held in high estimation, and there can be no doubt that they are both wholesome and nutritious. In the North of England and throughout Scotland they are much valued, and however small the cottager's garden may be, room may generally be found in it for a bed of Leeks. Leek shows in some places are not uncommon, and the productions in this way sometimes exhibited are marvellously fine. Notwithstanding this, however, Potatoes are almost the only vegetable which finds favour with cottagers, and these are planted year after year upon the same ground until it becomes Potato sick, and produces inferior crops; even in cases in which a change of seed is occasionally had recourse to on account of the numbers of small tubers which are almost unavoidably left in the ground, the stock soon becomes mixed and deteriorated, as more than one variety can seldom be satisfactorily cooked together. Unless a cottage garden be larger than such gardens usually are, late Potatoes might be excluded from it altogether, and to admit of this being done, a practice, which is not unusual in some parts of the country, might become general, viz., that of farmers allowing cottagers to plant a row or two of Potatoes in their fields on condition that they well manure the ground. This concession on the part of the farmer is not wholly a loss, and the advantage to the cottager is considerable, inasmuch as it leaves his garden at liberty for the culture of other crops, and enables him to adopt some system of rotation. But to return to the Leek; it enjoys, as Mr. Groom has truly said, almost an immunity from disease, as well as from the attacks of insects and vermin of all kinds, for should a hare or two pay a nocturnal visit to a cottage garden (not by any means an unusual occurrence), when morning dawns the cottager may find just enough of his Cabbage or Cauliflower plantation remaining to point out the place where it formerly existed; but the Leek bed he will always find to have been respected. The Leek will flourish in any kind of soil, but the richer or the more highly manured this may be, the finer will be the produce.

P. Grieve.

Culford Hall.

IRRIGATION OF KITCHEN GARDENS.

Let us first advert to sewage irrigation in the neighbourhood of towns. This question possesses a double interest, the rendering of towns more healthy; and the utilization of the manure, which ought to be employed for increasing the fertility of the soil. Ever since 1867 experiments have been made with sewage in the plain of Gennevilliers (Seine), and the results have been most satisfactory. The large sewer of Paris, into which the several small ones run, forms, as it were, a subterranean stream, which flows into the Seine near the bridge of Asnières. This clears Paris to some extent of its sewage; but the result is not wholly satisfactory, inasmuch as the muddy torrent has considerably increased since Paris has been better supplied with water. Muddy deposits formed in the Seine at the mouth of the new tributary, and it was evident that the river was becoming infected. Engineers employed by the committee for sanitary improvements at first thought of purifying the water, and by mixing the solid matter with some chemical preparation, forming a valuable manure, but on being tried this method proved tedious and expensive, consequently they adopted the more simple and economical one of turning the sewage into the fields, where it soon gave proofs of its efficacy. The plain of Gennevilliers, joined to a part of that of Asnières, presented an area of more than two hectares, the soil of which was of a flinty character, and not very fertile. Nature had, however, as it were, placed it by the side of the sewer, so that it might be benefited by the rich manure which its waters contained.

In order that it might be properly watered, it was necessary to raise the torrent 12 metres; to pass it to the opposite side of the Seine, and give it an artificial fall so as to enable it to circulate all round the land; a steam pump was employed for forcing up the water, and on the bridges of Clichy and St. Ouen were placed cast iron pipes, which served for conduits; small channels in brickwork conveyed the water to the different parts of the land where it was required, and small sluices placed here and there enabled the cultivator to direct its current wherever he wished by simply digging out side trenches. Thus controlled the irrigation produced excellent results, especially in the case of vegetables—Cabbages, Artichokes, Asparagus, Cauliflowers, Turnips, Carrots, Beetroots, Cardoons, bulbous Chervils, Tomatoes, Melons, and Strawberries. All these, cultivated alternately, speedily acquired an enormous size, and were first-rate in quality. Plants, too, used for perfumery, and others, succeed admirably. Roses and trees—particularly fruit trees—grew in a most satisfactory manner, and the value of the ground has been increased from 90 francs to 550 francs per hectare. Light soil filters the sewage and clarifies it to such an extent that its water returns to the Seine in a clear state. There can be no doubt as to the good quality of vegetables grown by means of sewage; but it should, if possible, be applied underground not on the surface, as in that case it soils the plants. When applied underground, too, the air is kept free from disagreeable odours. In the case of permanent pastures the soil in time becomes sewage-sick, owing to the accumulation of detritus on the surface, but experience proves that there is no danger of this happening in land used for gardening purposes, the soil of which is being constantly dug up. The Agricultural Society of France intends to offer a prize in 1878 to the cultivator who has endeavoured to utilise sewage in the best manner and to the greatest extent.—"Revue Horticole."

WAYS OF DESTROYING THE COMMON THISTLE.

Practical Man.—What may you be doing this morning? Theorist.—Getting rid of these horrid Thistles. P. M.—You will not get rid of them if you go to work in that way. T.—Why not? P. M.—Because you attack them when they are only just appearing above the ground. T.—That is just the reason why I am attacking them. What ought I to do? P. M.—Wait till the autumn, and then draw them. T.—What! Let them grow up and gather strength? P. M.—Certainly. For every one that you cut off now three will come up in its place. T.—But what is the use of waiting so long before you begin to destroy them? P. M.—Why, you see, they can be got out their whole length in the fall of the year, and the rain runs into the holes left when they are drawn, and what remains rots away. T.—That is certainly a better way of destroying them, and will save me a world of trouble; it will be such a blessing to be rid of them for ever. P. M.—Oh! if you expect that, I fear you will be disappointed. T.—Why, did you not say that the wet would get into the holes after the Thistles were drawn, and destroy what remains in the ground? P. M.—But they will come up again for all that. Here Theorist was puzzled. He was aware that leaves are the lungs of a plant, and he was led to infer that vegetables were like animals in one respect, that they could not exist when deprived of these organs. Wishing to be well rid of the Thistles, and being told that drawing them was the only sure method of dealing with them, and that even after that operation they would appear again in the following year, he determined to go on with his experiment. The result was as follows:—He persevered through the first season, cutting them off as fast as they appeared, never allowing them fully to develop their leaves. There were, of course, none to draw at the fall of the year, and in the year that followed there were not so many to begin with; as the season advanced the call for the hoe was less frequent, and long before the winter set in not a Thistle was to be seen. It was rather late in the third year when Theorist took his hoe to commence an attack upon his enemy the Thistle, but after a most careful search he at last succeeded in finding—one.

Late Broccoli.—For several years I have tried the latest Broccoli I could procure, but only in a few cases have I been successful in gaining a decided advantage over the kinds with which we have been long familiar. Often, too, have I tried kinds under different names which have proved identical, not only in appearance, but also in time of coming into use, and except the seed comes to us in sealed packets, it can seldom be depended upon. Veitch's Autumn Giant Cauliflower and Snow's Winter White Broccoli are both valuable sorts, but we never get them true to name, except in packets sealed with the seed-grower's name. It is not uncommon for cultivators to save a little good Broccoli seed, and by choosing the latest and finest heads from the stock for that purpose, a great improvement may be made on the original kind. At Westwood Park Broccoli of unusually good quality saved in this way is at present (June 12) in use, and likely to be until late in the month. The heads are fit for table before they are uncovered by the leaves, and, if left long enough, they grow to an immense size, and are very white.—M. Temple, *Impney.*

Dandelions as Salad.—The eloquent plea for the beauty of the Dandelion, in The Garden of last week, reminds me also of its usefulness; in the early spring there are fewer sweeter salads than the young shoots of this plant. Some years ago I knew a French nurse who went out into Hyde Park with her charge, salad-basket in hand, as was her custom in the country. The police, espying her digging and storing, remonstrated, and finally apprehended her. They could speak no French, and she no English; and the basket and its contents were seized as proofs of her petty larceny. It was not till a lady, attracted by the crowd, recognised the nurse and her charge, that she was liberated. The contents of the basket were Dandelions and Celandines, quite enough for the salad of a good-sized family. By using them thus the numbers of a troublesome weed would be much lessened, while a sufficiency would doubtless be left to line the brook-side and embroider the meadow with gold.—D. T. Fish.

Stanstead Park Cabbage Lettuce.—Of all the Lettuces which I grow this is the best for winter and early spring. It is very hardy, and forms good hearts, and by using protectors it can be had all the winter, until the Black-seeded Brown Cos (a favourite in this neighbourhood) comes into use early in the spring. The protectors which we use here are of our own construction, and are well adapted for the purposes to which they are applied. They can be made by any carpenter, and are neat in appearance. They consist of inch deal boards, the back boards being 11 in. and the front boards 9 in. deep. These are fastened together by cross pieces, and are grooved near the upper edge in order to secure the loose squares of glass which slide in from the ends, and form a roof. The frames are about a foot wide, and we find 6 ft. lengths most convenient for moving from one place to another. Such frames are most useful for protecting Lettuces, Peas, Radishes, and early Potatoes.—David Lumsden, *Blorholm Gardens, Sleaford.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Early Peas.—I sowed Ringleader and Dickson's First and Best on the 2nd of February; my first gathering was picked from Ringleader to-day (the 9th). I shall gather from Dickson's First and Best on the 12th. One season I gathered Ringleader on May 22. These varieties are quite twelve days later this year than usual. We are now digging up a full supply of New Potatoes from the open ground, the varieties are Veitch's improved Early Ash-leaf and Mona's Pride.—Richard Nisbet, *Aswarby Park Gardens, Lincolnshire.*

—— We are growing here Ringleader, William I., Little Gem, Racehorse, and Laxton's Shah. From the last-named kind we gathered a dish this day (June 10); Ringleader will be from four to six days longer, but comes next. Everybody admits that Mr. Laxton is the raiser of two of the best late Peas, consisting of Omega and Connoisseur, and this season proves that he is also the raiser of the earliest.—R. Gilbert, *Burghley.*

Early Paris Market Cabbage Lettuce.—We are now (June 9) cutting beautiful firm-hearted Lettuces of this variety. Its seeds were sown in boxes under glass early in March, and transplanted in April. In point of earliness and good quality, this is the best of the Tom Thumb section I have yet grown.—E. Hobday, *Ramsey Abbey.*

Wheeler's Tom Thumb Lettuce.—We are just now, and have been for some time, using this excellent little Lettuce, the flavour of which is all that could be wished. I would strongly recommend it to all lovers of good and early salads.—R. Gilbert, *Burghley.*

Germination of Vegetable Seeds.—At the beginning of this year it was predicted that, in consequence of last season's bad harvest, seeds would have a lower vitality than usual, and that there might consequently be some difficulty in securing a good plant. Although our soil is a difficult one with which to deal, I have never known seeds of all kinds to grow more freely or with more vigour than they have done this season. This I attribute in some manner to our constant practice of covering them with a compost made of charred and decomposed rubbish that daily accumulates from different sources, and which, when properly managed, forms a most valuable fertiliser.—E. Hobday, *Ramsey Abbey.*

The Virtues of Celery.—Somebody has discovered extraordinary virtues in Celery. A writer, who is familiar with its virtues, says: "I have known many men, and women too, who from various causes have become so much affected by nervousness that when they stretched out their hands they shook like Aspen leaves on a windy day, and by a moderate daily use of the blanched footstalks of Celery as a salad, they became as strong and steady as other people." A number of other extravagant statements of the same kind are also given.

Trophy Tomato.—We have tried several of the newest and most highly praised Tomatoes extant without changing our conviction that the Trophy is yet the best. The Arlington is firm, solid, and of good shape, ripening with the Trophy or a little earlier. The Conquerors and Victors—both excellent early sorts—ripened the one with the other. A very few ripe Tomatoes were gathered upon the Victors first, but there was no difference in the average ripening. Hathaway's Excelsior is a beautiful variety of medium size, round, and solid.

NEW PLANTS, &c.

Dieffenbachia (late maculata) var. illustris.—A distinct and prettily-marked variety, having dark green leaves marbled irregularly with light apple-green and silvery-grey, the grey blotches being striped or dotted with narrow dark green markings.—"L'Illustration Horticole," pl. 234.

Eranthemum roseum.—An erect-growing stove shrub, having heart-shaped leaves of a rich, dark green colour above, and of a dull purplish-crimson tint beneath, and bearing erect, terminal spikes of dull, reddish-purple flowers. It forms an attractive foliage plant when young, but is not adapted for forming large specimens.—"L'Illustration Horticole," pl. 235.

Dahlia gracilis.—This is a Mexican plant discovered in the summer of 1873 by M. Roezl, and by whom it has been introduced to Continental gardens. It is of slender habit, having elegantly pinnate foliage, the leaflets being coarsely serrate. The eight-rayed flowers are of the brightest orange-scarlet colour, the disc being yellow. It appears to be nothing more than a slender-habited variety of the old Dahlia coccinea, which has recently been redistributed in English gardens by Mr. H. Cannell. It is, nevertheless, a most graceful and effective plant, and one well worth a place in the herbaceous or shrubbery border, and its brilliant flowers are well adapted for cutting.—"Gartenflora," t. 861.

Quisqualis sinensis.—A plant nearly allied to the Combretaceæ; it was introduced to English gardens long ago, and is figured in the "Botanical Register," xvii., t. 15. It is a native of China and the East Indies, and is of slender habit, having opposite oblong leaves and terminal clusters of long-tubed, purple-petaled flowers. It is interesting, but is not likely to be of service as a decorative plant.—"Gartenflora," t. 862.

Monopyle racemosa.—This is a large-flowered Gesnerad from South America, bearing terminal spikes of white, rosy-spotted Gesnera-like flowers. In general habit the plant reminds one of the continental pale-flowered Nægelias. The plant was raised from New Granadian seeds sent to Messrs. Veitch and Sons, with whom the plant has flowered, and, when more plentiful, it promises to be a useful decorative plant.—"Botanical Magazine," t. 6233.

Cotyledon teretifolia. — A distinct yellow-flowered South African plant, having long cylindrical leaves, the apices of which are pointed like arrow-heads. The flowers are borne in clusters at the apex of slender cylindrical stems, a foot high. It is a desirable addition to effective succulent plants, and well deserves culture. —"Botanical Magazine," t. 6235.

Does Phylloxera attack other Fruits or Plants besides the Vine?—Referring to the question raised by Mr. Ross (see p. 539), regarding the attacks of the Phylloxera upon the Vine only, I may state that all the experiments tried here failed to show that it would devastate any other plant except the Vine. Plums and other fruit trees were planted in the Phylloxera-infested soil, and still they continue to grow without any symptoms of being attacked. Clean, healthy Vines were, however, attacked and devoured immediately they were planted in the affected border. A striking instance, however, has come to my knowledge of the way in which the Phylloxera may be imported with other plants besides the Vine. A quantity of Roses arrived at a garden in Scotland from France in winter, when the ground was hard frozen, a bench-full of soil had been prepared for potting a quantity of young Vines, and in this soil the Roses were "heeled in." In due course the Vines were potted in the soil, and were immediately afterwards attacked by the insect, which could have been introduced in no other way than by means of the Rose trees. I do not think that there need be much alarm as to Phylloxera in our Vineries in this country, if it be vigorously attacked whenever it makes its appearance.—D. Thomson, *Drumlanrig.*

Thinning Grapes.—Reference has been made in your columns (p. 484) to Mr. Douglas's mode of thinning Grapes, which I think might be imitated by any one who wishes to have handsome bunches, either for the dessert-table or for competition. Few will admit that bunches with the berries literally jammed together are either models for exhibition or for ornamenting dessert dishes; but, on the other hand, berries—however fine they may be in size and colour—which hang so loose as to show the foot-stalks and rub the bloom off each other, are discreditable to the cultivator. On dessert dishes such fruit appears to great disadvantage. I have seen Grapes on many dinner-tables, and where they were compact without being jammed against each other their appearance was very superior to that of loose bunches. I have been at Loxford Hall on two occasions, and specially noted the fine form of the bunches of Grapes and evenness of the berries grown there, showing that they had been skilfully thinned.—M. Temple, *Impney.*

Rust on Strawberries.—In most cases the cause of rust on Strawberries may be traced to damp or cold chills when the fruit is in bloom; when it occurs upon out-door Strawberries, this is undoubtedly the cause of it. Syringing Strawberries in pots overhead ought to be discontinued at least a week before they come into bloom, and not renewed until the decayed petals have fallen off. If kept damp they adhere to the embryo berries, and frequently generate a fungus, which is injurious to the development of the fruit. Of all our hardy fruits the Strawberry is the most tender, and most liable to be injured when in flower. Imperfect fertilization may be the cause of your correspondent's hard and rusty Strawberries. He does not say whether the fruit was fully developed or not, but I think its failure may be traced to one or other of the causes just named. When I was in the habit of growing Strawberries in pots, my first lot often contained imperfectly developed fruit, an occurrence which I always attributed to imperfect fertilization.—J. Thomson, *Shawdon.*

June Budding of the Peach.—This mode of getting Peach trees ready for planting in one season is, according to "Coleman's Rural," a matter of some importance. As soon as the shoots from which the buds are to be taken have grown about a foot, pinch the top so as to develop the buds. When the young trees to be budded have attained the thickness of a goose-quill, they may be operated upon. Bud about 6 in. from the ground, and in about ten days, if the bud looks fresh, it will have taken; loosen the bandage and pinch the top off the tree. In a short time the bud below will be sufficiently established to admit of heading back the tree to within an inch or two of the bud. Let the inserted bud start a few days, and then rub all others off.

Bandage Propagation.—The practice of slitting a branch and binding Moss or other material over and about the wound is an old custom. Six months or more ago we applied it to Pelargoniums with excellent results. In raising Tricolors from seed it hardly ever occurs that the whole plant is variegated. Here is a shoot perfectly green, here is one with leaves half variegated, half plain; still another shoot may be variegated with more or less uniformity—the only one upon the seedling, and it is this upon which we have to rely for establishing a "fixed" Tricolor of seedling origin. Those who have propagated cuttings in the usual way know that in spite of the most careful efforts the Tricolors sometimes fail to strike. In this case we should lose our variegated shoot and, perhaps, a year or more of time might be spent in its production. It was upon such shoots that we ("Moore's Rural") tried cutting the stem from half to three-quarters through—pressing the cut slightly open so that the parts should not grow together and then binding with Moss—sometimes placing a small quantity of damp soil as if it were putty underneath and covering all with netting, gauze, or merely tying with a tape or yarn. This of course must be kept constantly moist. In about the usual time required to strike the same cuttings in sand the roots will be found growing through the Moss, when the shoot may be cut off just beneath the bandage and, with or without removing it, placed in small pots. By this method we have never once failed, and, indeed, we believe it to be unfailing, even though attempted when, under unfavourable conditions of moisture and temperature, the sand-bed would prove useless. One advantage of this mode of propagation is that it may be accomplished during the winter in a conservatory or sunny window without marring the symmetry of the plant operated upon until the shoot is ready to be taken off. The variegated leaves hold their colours firmly while the callus and roots are forming, and the bandage may generally be concealed by the foliage. It is well to support the shoot which has been cut nearly through by a neat stick or prop, since incautious handling is liable to break it off. In this way many new and costly plants which one is desirous of increasing, and which one is timid about running any risk, may be treated with little fear of failure.

Taking Impressions of Plants in Colour.—M. Bertot, of the Paris Academy, has just made known a simple method of taking impressions of plants, requiring only a large sheet of paper, some Olive (or other) oil, black-lead, ashes, and resin (or colophony). The paper is first lightly oiled on one side, then folded in four, so that the oil may filter through the pores, and the plant may not come into direct contact with the liquid. The plant is placed between the leaves of the second folding, and in this position pressed (through other paper) all over with the hand, so as to make a small quantity of oil adhere to its surface. Then it is taken out and placed carefully on white paper; another sheet is placed above (since two impressions can be taken), and the plant is pressed as before. On now removing it an invisible image remains on the paper. You sprinkle over this a quantity of blacklead (or ashes, &c.), and distribute it in all directions, as in applying sand to writing; the image then appears in all its parts. With an assortment of colours the natural colours of plants may be reproduced. To obtain fixity, resin is added to the black-lead (previously) in equal quantity; the impression is fixed when it is exposed to a heat sufficient to melt the resin.

THE GOLDEN FRITILLARY.

(FRITILLARIA AUREA).

This species is one of the prettiest of an attractive genus of hardy spring-flowering bulbs, but it is still very rare in cultivation, and scarcely known in this country. Indeed, Mr. Baker, in his monograph of the genus, in the "Proceedings of the Linnean Society," united it with F. lutea, but a subsequent examination of living plants has induced him to accord it specific rank. It certainly approaches the species named in habit and general character; having, however, a more broadly bell-shaped flower, besides the difference in colour. Dr. Kotschy discovered this handsome plant some years ago in the Taurus Mountains in Cilicia; and Schott described it in the "Œsterreichisches Botanisches Wochenblatt" for 1854, presumably from dried specimens, as no mention is made of its being in cultivation. Possibly he may have had living plants before him, though he gives only a short Latin description. Be that as it may, last year Dr. Regel figured and described it in the "Gartenflora," from specimens sent to him by Mr. Max Leichtlin; and the same gentleman has introduced it into this country. It is a dwarf plant, those described by Regel being about 6 in. high; but they were grown in pots. The lower part of the stem is naked, and beneath the solitary, terminal, drooping flower there is a cluster of from eight to ten narrow, somewhat glaucous leaves, from 2 in. to 3 in. long. The flowers are 1 in. deep, and of a rich yellow both inside and out, and sprinkled over with small black spots. From the climate of its native habitat it will doubtless prove hardy in this country.

W. B. H.

Flower Shows and their Influences.—Is not showing becoming a trade and regarded by competitors as a means of making money? Are not Societies, by overbidding each other for "popular" support, animated by selfish motives rather than basing their action on the higher principles of promoting art? To speak plainly, is not horticulture being degraded to profitable purposes? Look at the programmes which are being sown broadcast. They stake their very existence almost on the chance of their fixture being a fine day. They have no reserve fund—cannot afford one—and, what is more, cannot safely exist without one. How many Societies have fallen and Exhibitions ceased to exist by risking their all on the chances of a fine day, and the day has proved rainy? They had no guarantee fund, they pledged their income before receiving it, and the end was a collapse. Is not showing being overdone—the hobby-horse being ridden too fast—the mania approaching a surfeit? Shows are becoming too common, and one is but the counterpart of another. I now allude to the London Shows. A regular visitor to these not only knows almost to a certainty who will win the respective prizes, but what the plants will be which compose the groups. There is a sameness in these Shows which palls on the appetite; and how tired the reporters must be of repeating themselves! I should like to hear what they think about this subject, for I should imagine that few can form a better opinion of "Show and showing" than these gentlemen."—"Journal of Horticulture." [We very much sympathise with these views; the numerous Shows are becoming a real infliction to horticulturists about London. Shows are now of very doubtful effect on gardening; the real tests of the gardener's skill and taste are in the garden and not at the "Show," and the decadence of the great flower-shows is by no means an unmixed misfortune for horticulture.]

Another New Park for Birmingham.—At a special meeting of the Birmingham Town Council last week, the Mayor (Alderman Chamberlain) read a letter announcing the gift to the town of another fine estate for the purpose of a public park by Miss Ryland, the donor of Cannon Hill Park and of other valuable local gifts. It seems that a short time ago Miss Ryland was asked to sell to the Corporation some 42 acres of land situated at Small Heath, where the Council was desirous of opening a new park. Miss Ryland, in reply, decided to sell the land, but expressed her willingness to give it to the town for a term of 500 years at a peppercorn rent, subject to the application of the rents until the termination of the present lease, which has four years to run, towards the laying out the land as a park. The estate, which is beautifully wooded, is situated two miles and a half from the centre of the town, but well within the borough boundary, and in a quarter where the artisan class predominate. The intrinsic value of the gift was estimated by the Mayor at not less than £30,000. Cannon Hill Park, for which the town is indebted to the same lady, is larger, embracing some 60 acres of undulating and well-timbered land, of the estimated value of £70,000.

Influence of Light on the Growth of Plants in High Latitudes.—In a valuable treatise on the vegetable productions of Norway, which has been published by Dr. Mueller, some extraordinary facts are related respecting the influence of the long duration of light during the summer months on the growth of vegetables in the higher latitudes in Norway. At 70° N. it was found that ordinary Peas grew at the rate of 3½ English in. in twenty-four hours for many days in number, and that some cereals also grew as much as 2¼ in. in the same time. Not only is the rapidity of growth affected by the constant presence of light, but those vegetable secretions which owe their existence to the influence of actinic force on the leaves are also produced in far greater quantity than in more southern climates, since the colouring matter and pigment cells are found in much greater quantity, and the tints of the coloured parts of vegetables are consequently deeper. The same remark applies to the flavouring and odoriferous matters, so that the fruits of the north of Norway, though not equal in saccharine properties, are far more intense in flavour than those of the south.

NOTES AND QUESTIONS—VARIOUS.

The Earliest Strawberry.—La Grosse Sucrée is the earliest Strawberry with which I am acquainted. I gathered ripe fruit of it from the open border to-day (June 12), which may be considered very early for this late season. It has a robust constitution, and is a free bearer, but it is not (as its name would imply) one of the sweetest type; still it is excellent in quality.—W. Wildsmith *Heckfield*.

Hen-and-Chickens Daisies.—I see a note in last week's Garden, which reads to the effect that there is but one variety of Hen-and-Chickens Daisy; I send herewith a few flowers of two varieties, which are growing at Tottenham. There is a third variety which I have not seen for years; it is white, and I think even more proliferous than the two varieties which I enclose.—A. J. Perry. [The varieties sent have the smaller flowers well thrown out from the large central one, and are very handsome—one delicate pink, and the other mottled red.—Ed.]

Gardens in the South of France.—I was some days at Monaco a month ago, and certainly I wish you, and all who care for flowers, could have seen the Scarlet and Ivy-leaved Pelargoniums in masses of flower, the latter sometimes in cascades of 10 ft. or so over the cliffs in the old town garden, which is so much more beautiful than the Casino at Monte Calo; there is also a shrub you should recommend very highly, when grown in a slightly peaty compost—the Abutilon cultriforme; at Nice and Cannes its masses of pale yellow flowers, with large red calyxes, made a charming effect, and quite unlike anything else.—E. H. W.

Porous Glazed Pots for Strawberries.—I should like the opinion of some of your readers respecting the desirability of using glazed pots for Strawberries. They are such thirsty souls that it tries my patience to supply them with water—my belief is that glazed pots would answer. Have they ever been used for such Strawberries, and if so, with what result?—Observer.

The Double Buttercup.—This showy flower is very common in cottage-gardens about here. It may not be generally known that it is necessary to lift the roots in autumn and keep them under cover; if left in the ground they perish during severe frosts.—South Wilts. [About London the Double Buttercups never perish on the worst soils, but as there are various sorts it might be interesting to know to which "South Wilts" refers.]—Ed.

Rare Lilies.—The following are now in bloom in the Bulb Company's grounds at Colchester, viz., Lilium Krameri roseum, L. callosum, and L. pulchellum. These are at present in beautiful condition.

Libertia grandiflora, pulchella, and ixioides.—I have all these three species now in bloom: they are graceful and elegant plants, but L. grandiflora is the only one sufficiently showy to find favour with the general public. I do not find them hardy enough to stand the winter in the open border with any certainty of success, but they do very well in pots in a cold and rather deep glazed pit. In leaf they much resemble a Carex, whilst their snow-white flowers remind one strongly of a Tradescantia.—H. Harpur Crewe, *Tring*.

Rubus deliciosus.—Where can I purchase this Bramble? Will it succeed under the shade of trees?—A. M. D. [We believe it is distributed among our more important tree and shrub nurseries; we have no doubt that it will succeed under the shade of trees, though we have not seen it in such situations.]

Best Early Kidney Potatoes.—We have something like a dozen named varieties of these Potatoes, many of which differ in name only; the best among them for earliness, productiveness, and exhibition purposes is Rivers' Royal Ashleaf. This day (June 10th) we have tried most of them, and this is the decision at which we have arrived.—R. Gilbert, *Burghley*.

London Commons and Parks.—The Metropolitan Parks and open spaces are just now looking at their best. Londoners should visit the pretty common of Tooting Beck and Tooting Graveney, the grand heaths of Blackheath and Hampstead, and the parks at Rotherhithe and Finsbury. During the past twelve months, under the direction of the Metropolitan Board of Works, considerable alterations have taken place in these several pleasure resorts, which, we fancy, the numbers who visit them will appreciate.—"Metropolitan."

A Strawberry Land.—As we write, Strawberries are yet so very high-priced in Covent Garden that the following extract from the "Californian Horticulturist" reminds one forcibly of the drawbacks of our climate:—"About the 1st of this month (May) Strawberries arrived in considerable quantities, and the price came down to 15 cents per lb. The quality, of course, was much improved; the colour of the sort—Longworth Prolific—always the first in the market, had assumed its usual richness and deep red, its size the customary large dimensions, and the flavour its wonted goodness and sweetness. What an admirable assistance to health and digestion is this delicious and splendid berry at this season of the year, which is lacking in all kinds of fruit except Oranges, Apples, and Bananas, of which we have become almost tired."

No. 240.] SATURDAY, JUNE 24, 1876. [Vol. IX.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE GROVE AT TEW PARK, OXON.

TEW Park will long be interesting, from the fact that it was there J. C. Loudon practised agriculture before he began writing the works which were such a marked addition to the horticultural literature of England. The present short notice, however, will not concern Loudon's planting, or other work of his of which there is much that is interesting, but merely refer to a part of the grounds called the Grove, where one of the earliest examples of the wild garden has been successfully formed. The Grove is a plantation of remarkably fine trees, bordering a wide sweep of grass, which varies in width. This grove, unlike much of the rest of the ground, does not vary in surface, or but very little, so that one of the greatest aids to the wild gardener is absent. Originally this now pleasant grove was a dense wood, with Gout-weed mainly on the ground, and troublesome flies in the air. A few years ago the formation of a wild garden was determined upon, and the first operation was the thinning of the wood; light and moving air were let into it, and weak or overcrowded trees removed. This, so far, was a gain, quite apart from the flowers that were in good time to replace the few common weeds that occupied the ground. Of these the unattractive Gout-weed was the most abundant, and the first thing to do was to dig it up. It was found that by deeply digging the ground, and sowing the wood Forget-me-not in its place, this weed disappeared—a great advantage. Who would not exchange foul weeds for Lilies of the Valley, Wood Forget-me-nots, and many other plants possessing equal charms! The effect of broad sheets of this Wood Forget-me-not (Myosotis sylvatica) beyond, and seen above the long waving Grass gradually receding under the trees, was very beautiful; now, however, its beauty is not so marked as earlier, when the colour was fuller, from the plants being more compact; but one charm of the wild garden is that the very changes of plants from what may be thought their most perfect state, may be in itself the source of a new pleasure instead of a warning, such as so often occurs in the garden, that we must cut them down or replace them.

Not to mow is almost a necessity in the wild garden: considering that there is frequently in large gardens much more mown surface than is necessary, many will not regret this need. Here the Grass is designedly left unmown in many places, and thereby much labour is saved. Of course it may be cut when ripe, and most of the spring flowers have past and their leaves are out of danger; even in parts where no flowers are planted the Grass is left till long enough to cut as meadow. Except where actually required as a carpet, Grass may often be allowed to grow even in the pleasure ground; quite as good an effect is afforded by the unmown as the mown Grass—indeed, better when the long Grass is full of flowers. Three-fourths of the most lovely flowers of cold and temperate regions are companions of the Grass—like Grasses in hardiness, like Grasses in summer life and winter rest, like them even in stature. Whatever plants may seem best to associate with in gardens, an immense number—more than two thousand species of those now cultivated—would thrive to perfection among our meadow Grasses, as they do on the Grassy breast of the mountain in many lands. Some, like the tall Irises or Columbines, will show their heads clear above the delicate bloom of the Grass; others, like the Cerastiums, will open their cups below it, in this way multiplying the variety of effects that may be obtained. The varieties of Columbine in the Grass were perhaps the prettiest flowers at the time of my visit. The white, purplish, and delicately-variegated forms of this charming old plant, just seen above the tops of the long Grass, growing singly, in little groups, or in spreading colonies, were sufficient in themselves to form a wild garden for June. Established among the Grass they will henceforward, like it, take care of themselves. The rosy, heart-shaped blooms of the Dielytra spectabilis are recognised at some distance through the Grass, and, so grown, furnish a bright and peculiarly pretty effect. Tree Peonies succeed admirably, and their great heads of flower quite light up this charming wilderness. Plants of the Goat's Beard Spiræa (S. Aruncus) are very stately and graceful, even now before their flowering, being quite 6 ft. high. In a few weeks, when the numerous flowers are open, they will present quite another aspect. In the wild garden, apart from the naturalisation of free-growing exotics, the establishment of rare British flowers is one of the most interesting occupations; and here, under a Pine tree, the modest, trailing Linnæa borealis of the northern Fir-woods is beginning to spread. The Foxglove was not originally found in the neighbourhood; now the ordinary kind and the various other forms of this fine wild flower adorn the woods. In this way also the Lily of the Valley has been introduced and is spreading rapidly. Many climbing Roses and various other climbers have been planted at the bases of trees and stumps, but, though thriving, the plantation is as yet too young to show the good effect that these will eventually produce. There is no finer picture at present to be seen in gardens than a free-growing flowering creeper, enjoying its own wild way over an old tree or stump, and sending down a rain of flower-laden shoots. A Clematis montana here, originally trained on a wall, sent up some of its shoots through a tree close at hand, where, fortunately, they have been allowed to remain, and now the long shoots hang from the tree full of flowers. The large plumes of the larger hardy Ferns are seen here and there through the trees and Grass, and well they look—better here among the Grass and flowers, partially shaded by trees, than in the hardy Fernery, which is so often a failure, and when a success, often "too much of a muchness," so to say. The wild garden of the future will be also the true home of all the more important hardy Ferns. The rivals of the Ferns in beauty of foliage, the Ferulas, and various other umbelliferous plants with beautifully cut foliage, have also their homes in the wild garden. The Welsh Poppy thrives, as might be expected, admirably in the grove, its rich yellow cups just showing above the meadow.

In another part of the grounds there is a raised walk quite away from trees, open and dry, with sloping banks on each side. This may be called a sun-walk, and here quite a different type of vegetation is grown; Scotch Roses, Brooms, Sun Roses, Rock Roses, &c. It is quite recently formed, and will probably soon accommodate a more numerous and interesting flora. Such an open sunny walk, with dry banks near, is a capital position in which to carry out various charms of the wild garden. Peculiarly suitable, however, in such a position is a good illustration of the vegetation of the hot, rocky, and gravelly hill-sides of the Mediterranean region, and this is quite easily represented, for the various leguminous plants and dwarf Pea-flowered shrubs, such as the Spanish Broom, many of the beautiful Rock Roses (Cistus), the Sun Roses (Helianthemum), and the Lavenders will, with a host of companions, for the most part thrive quite as well on a sunny bank in England as in Italy or Greece. In the wild garden it is easy to arrange aspects of vegetation having a geographical interest, and a portion of such a sunny bank as I allude to might be worthily furnished with the various aromatic plants (nearly all hardy) which one meets with on the wild hill-sides of Southern France, and which include Thyme, Balm, Mint, Rosemary, Lavender, and various other old garden favourites.

There are various other parts of the garden here of which we might speak with advantage, but at the present time they are undergoing change, and there is every prospect that the gardens here will one day be even much richer than at present in all that interests lovers of Alpine and hardy flowers, as both Mr. Boulton and his able manager, Mr. Macfarlane, admire these, and are making good preparations to grow them well and also in a picturesque manner. The Edelweiss (Leontopodium alpinum), so often regarded as difficult to cultivate and difficult to obtain, is really not so hard to manage, and we noticed a healthy tuft of it in a border here bearing numerous flower-heads larger than one notices on the Alps. Gentians (verna and acaulis) are planted out here in the turf in one of the old enclosed gardens, and, so far, with a good result; the soil is made deep for them—3 ft.; there is plenty of Oxford gravel in it. The Grass is of course kept low till such times as they themselves form the turf. W. R.

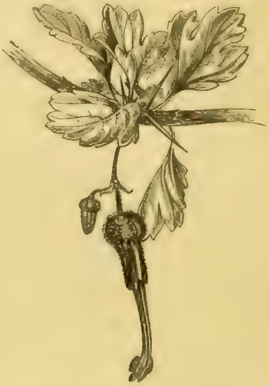
THE SAXIFRAGE.

PERHAPS this genus, many of which are now in flower, includes more true Alpine flowers than any other. In the Arctic Circle, in the highest Alpine regions, on the arid mountains of Southern and Eastern Europe and Northern Africa, throughout the length and breadth of Europe and Northern Asia, they are found presenting many interesting varieties of form and colour. From their Alpine habitats one might expect these to be as difficult of cultivation as other Alpine plants, but they are the easiest to grow of all. Hence they were common in collections of Alpine flowers when few other families were represented in them. Of late years many very pretty species have been introduced, and so great are the variety and merit of the family now that a very interesting garden might be made of its members only. For purposes of cultivation some kind of rough division of the members is convenient, as they are so different in aspect and uses. The most ordinary form is the Mossy or Hypnoides section, of which there are many kinds in cultivation. Their delicate, Moss-like, spreading tufts of foliage so freshly green, especially in autumn and winter, when most plants show decay, and their countless white flowers springing from this carpet in spring make them very precious inhabitants of gardens. These Mossy kinds are especially suited for the tasteful practice of carpeting the bare ground beneath taller plants. They are also admirable for their fresh green hue, with which they clothe rocks and banks in winter. They are indeed the most precious winter "greens" in the Alpine flora. Next to these we may place the very extensive silvery group as represented by such kinds as S. Aizoon and the great pyramidal-flowering S. Cotyledon of the Alps. Considering the freedom with which these grow in all cool climates, even on the level ground, and their beauty of flower and of foliage, they are perhaps the most precious group of Alpine flowers we possess. Anybody with a cottage garden can grow them. The London Pride section is another of great beauty in its way. These thrive under ordinary circumstances in lowland gardens, &c., even soon naturalise themselves in lowland woods and copses. But the most brilliant Saxifrages, so far as flower is concerned, are the Purple Saxifrage (S. oppositifolia) group and their near allies. Here we have tufts of splendid colour in spring with the same dwarf and the most perfect hardiness. The large, leathery-leaved group, of which the Siberian S. crassifolia is best known, are also of much importance: their constitution is such that they thrive in ordinary soil and on the level ground; there are various other minor groups. Such of the smaller and rarer Alpine species as require any particular attention should be planted in moist sandy loam mingled with grit and broken stone, and made very firm. Very dwarf and rather slow-growing kinds, like S. cæsia and S. aretioides, should be surrounded by half-buried pieces of stone, so as to prevent their being trampled on or overrun, and stone will also help to preserve the ground in a moist healthy condition in the dry season when they are most likely to suffer. Very dry winds in spring sometimes have a very bad effect on Saxifrages when some such precautions are not taken. When in established tufts they are apt to throw out stem-roots into their own cushions, so to say—cushions frequently moist during the autumn and winter months. When the tufts are suddenly dried, the plants suffer if the ground roots be dried too. V.

Double Buttercups.—I enclose a bloom of the double Buttercup to which I alluded (see p. 584), it is very common in the cottagers' gardens hereabouts. I presume it is a variety of the Turkish or Turban Ranunculus. It is a very handsome showy flower, with a good habit, being compact and dwarf, and in a cool, shady border it will last in bloom for three or four weeks; at a distance it looks almost as showy as an Aster or French Marigold. The other common double Buttercup in the gardens here is hardy enough, and has a showy flower, but it is stalky and weedy-looking in habit, though doubtless pretty and showy in a cut state.—G. B., *South Wilts.* [What you have sent is a Persian Ranunculus.]

THE FUCHSIA-FLOWERED RIBES.
(RIBES SPECIOSUM).

THIS plant has long been in cultivation in this country, and is so distinct from all its congeners that it well deserves a place wherever a few feet of a sunny wall can be spared on which it can be trained. It closely resembles the common Gooseberry in habit of growth, but the flowers are much larger and quite distinct in shape and colour. Professor Asa Gray recently described this plant in the "American Naturalist," whence we extract the following account of it:—"The Scarlet-flowered Gooseberry of California is so distinct that a separate section has been provided for it. Besides the bright colour and ample size of the flowers, its calyx-lobes do not turn back, and are often only four; the stamens protrude for an inch or more, and the rather dry berry is few-seeded. Its synonyms are characteristic: R. stamineum, of Smith, for the remarkable long stamens; R. fuchsioides, of Berlandier, for the resemblance to a Fuchsia blossom. It is hardy in England, and is prized in cultivation for its brilliant red flowers, garnished by the shining and almost evergreen leaves. Trained to the wall of a house it may be carried to the height of 15 ft. or 20 ft." It is now in flower, our life-sized illustration of which represents one joint of a slender spray sent by a correspondent, who remarks that he found it in an old cottage garden. We have seen it cultivated as a wall shrub in Scotland, but it does not appear to be grown in modern gardens so much as its merits demand. B.



Fuchsia-flowered Ribes (Ribes speciosum).

The Showy-flowered Bramble (Rubus spectabilis).—The leaves of this elegant shrub are alternate, and of medium size, with three leaflets, which are ovate, acutely-pointed, doubly and unequally serrated on the edges, and downy beneath when young. The stems are shrubby, round, smooth, or without prickles, and somewhat flexuose. The flowers are large, of a beautiful dark purple, scented, and produced singly on longish, terminal foot-stalks, just as the leaves begin to unfold, a time at which they are very conspicuous. The fruit is large, bright yellow, acid, and when ripe in June and July, excellent for tarts, but not produced in sufficient quantity to be available for that purpose, as it is only produced singly at the end of the lateral growth. This Bramble is a native of the North-west coast of North America, and forms a thinly-branched, hardy, deciduous shrub, from 4 ft. to 5 ft. high, with many stems, rising more or less annually from the ground. When adorned in April and May with its large, showy, dark purple flowers, it has a very elegant appearance, and in July, when its large yellow fruit is ripe, it forms an equally striking object. It grows freely in any common soil, and is readily increased by the means of spreading underground suckers, which are produced rather too freely if the soil in which it grows be rich, and when such is the case, it requires to have a portion of them removed every season to keep the plants within bounds. The old flowering stems also require occasionally to be cut out to make room for the younger ones. It was first introduced in 1827 by Douglas.—G. GORDON.

THE KITCHEN GARDEN.

TRANSPLANTING VEGETABLES.

In garden culture it is often necessary to transplant many crops from the seed-beds to their allotted quarters. This is not the best plan, however, in many cases—seldom is, in fact; and there are some vegetables that can hardly be transplanted successfully at all. The effect of transplanting is to check the growth, and generally to reduce the bulk of the produce, whatever it may be. Take Lettuces, for example. It is usual to sow them in beds, and afterwards to dibble them out in rows 8 in. or 9 in. asunder. This practice is all very well in good hands, and under generous culture; but should the weather be dry when the plants are moved, which is often the case with the vegetables of which frequent successions have to be sown, or if the plants be allowed to get too old before lifting, carelessly planted, or put into a poor soil, the chances are much against the crop being a good one, or the plants hearting or making those tender and succulent leaves which make the Lettuce so acceptable as a salad. The early varieties, such as the hardy Hammersmith, will hardly transplant at all without running directly to seed; but when sown in drills, and afterwards thinned, it is still one of the tenderest and most useful Lettuces we possess, for it will stand the most severe winters with impunity, and what is true of this kind is more or less true of all the others. It is always best to sow where the plants are to remain. Early crops may be sown twice as thick as they are intended finally to be; and every other row can be drawn young for spring salads and other purposes. We find such young and tender seedlings are just as much appreciated in the kitchen and pantry as hearted Lettuces; and as they come in when the winter and forced plants are nearly over, they form an excellent stopgap. Of the effects of transplanting upon Cauliflowers every cultivator is aware. "Buttoning," which is so apt to occur, in summer crops particularly, would hardly ever happen if the plants could be sown where they are to remain. This is sometimes done when the ground is vacant, and the time can be spared to prepare the ground, certain crops and fine heads being almost invariably the result. When the ground is dug for Peas, or Scarlet Runners, for example, which are usually cropped between with Cauliflowers, it is often as convenient to sow the seed as to transplant, and but very little time, if any, is lost. The seed should be sown as the ground is dug, just a pinch every 2 ft. or so, and in one or two rows, according to the width between the rows of Peas; and when the plants come up, they should be thinned away to one to each patch, and earthed up as they grow. Wherever blanks occur among other crops for which the ground has been prepared, it will be found a good plan to sow Cauliflowers in this way, to guard against failures in transplanted crops. I do not recommend the plan for autumn-planted Cauliflowers under handlights, however, for they are not so apt to button, and the transplanting hardens them against the winter; neither is it an advisable practice with winter Broccoli, for they can seldom be got to head soon enough, and a check is beneficial to them in the event of a severe winter. Of course, the effect of transplanting is the same with all the Brassica tribe. Those who want very large Cabbages and Savoys can best secure them by sowing the plants where they are to grow. It is in this way that Cabbages produce those specimens we sometimes see at exhibitions. All the Cabbage tribe are tap-rooters, and if not transplanted they send their roots down deep into the moist soil, and are able to stand the driest summer, unless the soil be naturally thin; whereas, if moved at the seedling stage, the roots are broken, and never penetrate the ground very deeply afterwards. With Turnips transplanting is out of the question; but Carrots will move, if the operation be performed with care when the plants are young—just in the rough leaf. They must be got up with all their roots, which should be dropped straight into a deep hole made with the dipper, and filled in around with fine soil from the top. In this way the tap-root is placed in its natural position, and the Carrot will grow and fill the hole. Indeed, we have heard of very fine and symmetrical examples being grown by transferring young plants in the above manner to wide holes filled with sand; but the practice is not to be recommended, except to make up blanks, and then only when it is too late to sow seed. With the same care Parsley may also be transplanted in a young state. Moist weather should be chosen for the work, and watering and stirring the soil in dry weather must not be forgotten till the plants are established. Beetroot transplants more successfully than either Carrots or Parsley; and, though the roots are apt to be forked, they are often good and fit for use. We have not unfrequently seen good roots got from amongst plants which have been used in the flower-beds, though they had not been put in with great care. As with the others, it must be moved when young, and before the root begins to form. All the Bean tribe will stand transplanting. Kidney Beans may be forwarded considerably by sowing first in boxes or pots, and afterwards putting them out. In late situations this is the only plan to get crops early, and blanks in the later sowings should always be made up with plants from the most crowded places. Broad Beans may be similarly treated; but in both cases the transplanting must be done before the plants make the second rough leaf. Peas may be moved without fear, either singly or in bundles, when they are 2 or 3 in. high, and failures among the rows can generally be made up in this way, though, as often as otherwise, such a thing is never thought of It is not necessary to make a continuous row in such a case, but only to put in a bunch of plants every foot or so, and these will meet on the stakes and make a good row. Peas are, in nine cases out of ten, sown too thickly, and there are always plenty, if the seed be at all good, to be had for transplanting purposes. Of course the practice of sowing in heat in pots, boxes, or on turves, as for early crops, is well understood by all good cultivators. Leeks transplant easily; but we prefer to sow and thin, and afterwards earth up, so as to have good roots soon without much trouble. Onions, both winter and spring sown, are frequently transplanted. With the former the work should be done early enough in autumn to enable plants to get hold of the ground before frost sets in; or, what is better, it may be deferred till spring, but not till the bulblets begin to form; blanks in summer crops should be made up at the thinning stage. In all cases, see that the long roots are carefully lifted with the plants, and that they are dropped perpendicularly into the hole and covered up to the base of the bulb, and no further; it matters little if the plant does fall over on its side for want of support, it will grow and bulb well enough. The Seakale does not transplant well even in a seedling state; I have tried it on several occasions to fill up, vacancies, but with only indifferent success. Those, therefore, who, like myself, grow their plants from seed to force annually, should sow thick enough to ensure a crop. One thing, with regard to transplanted crops of Lettuce, Cauliflowers, &c., may be mentioned, and that is, that slugs do not attack them so much as when the plants are sown where they are to remain. I have noticed this often, and attribute it to the latter being more tender in the tissues, and therefore more palatable to slugs.

Chef.

Early Peas.—With me Laxton's Unique, the best of all really dwarf Peas, is earlier than the Shah, of which Mr. Gilbert speaks so highly. Unique has done remarkably well this season, having been sown out in the open ground and thus escaped the attacks of birds. The haulm—now covered with Peas as large as those of William I. and as green as Grass—is about 16 in. in height, and can be grown without sticks at 2 ft. apart. On warm early borders Unique is unsurpassed as an early dwarf Pea. The Shah bears a close resemblance to Ringleader in all points; the pods are shorter and lighter in colour than those of Unique. The latter is just the type for the hybridist to work upon, and if Mr. Laxton could succeed in impressing it with more of the quality of his Omega—one of the best late dwarf Peas which we have—than it possesses, he would have made a good step in a right direction. There is yet room, in spite of the present wealth of early Peas, for the production of a really hardy and first early Marrow, having the fine qualities of the best wrinkled kinds but hardier. A round Marrow is invariably hardier than a wrinkled kind, and is preferred by growers for market. Mr. Laxton's Supreme has for some time been a favourite market kind, and William I. and Omega are fast coming to the front.—D.

Celery Trenches.—Where trenches for Celery or Peas are taken out before they are wanted for these crops it will be found advisable not to dig up the bottom of the trenches till they are required. The former takes root more quickly, and the latter germinate under such conditions in a shorter period than they otherwise would do.—R. P. B.

NOTES OF THE WEEK.

Sweet Peas in Pots.—These are now seen in abundance in the London flower market, and are well worthy of some attention in private gardens. If well grown they are very useful and welcome, especially earlier in the year, before Sweet Peas bloom out-of-doors.

Philadelphus laxus.—We are indebted to M. Lavallée for blooming specimens of this fine hardy shrub, gathered in his famous collection at the Château de Segrez. The individual blooms are very large and gracefully disposed on the branchlets. It will prove to be an important addition to our best flowering shrubs.

The Royal Botanic Garden Show.—There was such a numerous and brilliant gathering at the Royal Botanic Gardens, in the Regent's Park, on Wednesday last, that one was reminded of the old meetings of the society in its most prosperous days. There is no garden now existing so suitable for flower shows, and hence the regret that it is not as satisfactory as regards cultivation and interest as it is in landscape beauty.

Early Strawberries.—Mr. Thomas Malpass, Usk, Monmouthshire, writes to us respecting this subject as follows:—"I do not consider La Grosse Sucrée so early as Cuthill's Black Prince. Of that I gathered 2 qts. on the 8th of June, in the open ground off 100 plants: and up to-day (June 21) have gathered in all 15 qts. I have always found this to be the earliest and best Strawberry for early work, both out-doors and indoors."

The Canterbury Bell as a Pot Plant.—Plants of this old favourite are now abundant in the market for "furnishing," *i.e.*, house decoration. They are of marked value for this purpose, being, when well-grown in 6-in. pots, nearly 3 ft. high, bold in habit, their large flowers showing a variety of attractive colours—delicate pink, pure white, violet-purple, pale lilac, and others. The plants are kept out-of-doors all the winter, and transferred from the open air to the market benches.

Early Summer Kidney Beans.—These mostly come now from the Channel Islands, the Canadian Wonder being a popular sort and grown to a large extent. The best kind, however, received at this season, and earlier, from the Channel Island gardens is the Improved Syon House.

The Peach-leaved Hair bell for Cutting.—When gathered from well-grown plants the flowers of the various forms of this fine hardy plant are admirable for cutting, and are highly esteemed in the London market, especially the white single forms, of which there is one with a very faint shade of lilac. The most vigorous blooms are obtained from plants occasionally divided and replanted in fresh rich ground.

The Scarlet Strawberry.—This old kind, the best of all for preserving, and brought in considerable quantity to the London markets for that purpose, would probably repay attention as a table fruit. Its earliness and good flavour would go far to compensate for its small size. At Isleworth it is grown extensively under the orchard trees, under conditions not likely to fully develop its good qualities.

Manley Hall Gardens.—In these famous Manchester gardens a large winter garden will shortly be erected, and the whole re-arranged as a public resort under the management of Sir E. Lee, of Alexandra Palace. Mr. McKenzie is the horticultural director and designer of the winter garden. There are so many fine features already in these gardens that a well-directed attempt to convert them into a public establishment could hardly fail to succeed, and the results, too, to the public should be more useful and instructive than those that usually flow from public gardens as now organised.

Daphne rupestris.—Messrs. Backhouse write to us from the York Nurseries calling attention to the omission of this dwarf Alpine species from the article on Daphnes published in The Garden last week. They speak of it as surpassing the well-known trailing sweet-scented Daphne Cneorum both in beauty and fragrance. It has erect shoots, and forms dense, compact tufts, 2 in. high, and a foot or more across, covered with a mass of bloom which sometimes almost eclipses the plant. Its colour is a soft shaded pink or rose, and its flowers are individually larger and more waxy than those of D. Cneorum, but forming clustered heads in the same way. It is essentially a rock-plant, growing wild in fissures of limestone in peaty loam. It is perfectly hardy, and of easy culture.

—— A new nursery and seed firm has started in Edinburgh under the designation of Ireland and Thomson. The senior partner is Mr. J. S. Ireland, formerly manager of the seed department of Messrs. Methven and Sons, and the junior partner, Mr. D. W. Thomson, son of Mr. D. Thomson, Drumlanrig. Their nursery grounds are at Craigleith, Comely Bank, and their seed department will be carried on at 20a, Waterloo Place, near to the Waverley Station, Edinburgh.

THE FLOWER GARDEN.

HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

Never before were so many Moccasin-flowers (Cypripedium spectabile) seen about London as at the present moment. In Mr. Wilson's garden, at Kew, at Rollisson's, and in many other gardens, the handsome flowers of this plant add a novel charm to the scene. The abundance of it is mainly owing to large importations during the past winter. There is now enough in the country to suffice for generations if the plant be properly cultivated; most people know that it loves peat, but few keep the peat moist enough; dry peat is starvation to it, especially near trees where the little moisture is absorbed by the tree-roots. It should be borne in mind that this Cypripedium is a bog plant, and that in this country it thrives best in deep, moist peat or vegetable soil. If grown in a few gardens here and there, so well as at Glasnevin, it would soon become an established herbaceous plant. It is finely grown in a bog in Mr. Latimer Clarke's garden at Sydenham, and nothing could exceed the stately beauty of the plants we have lately seen there. In Mr. Clarke's group there is one with quite a deep rose lip, which looks quite showy beside its fellows. The common Forget-me-not is well worthy of culture, the colour being deeper and the individual blooms handsomer than the two earlier kinds. It is quite at home in moist borders. The most effective flowers of the season are the Foxgloves—the common kind and the white and spotted varieties—which are so stately in the shades of the wild garden, where single plants or groups last much longer than they do in exposed borders or beds. Among Alpine flowers the gem of the week is the Alpine Pink (Dianthus alpinus), the large gay blossoms of which stand up so sturdily from its dwarf cushion of shining green leaves. It is grown as a border plant in Mr. Latimer Clarke's charming garden at Sydenham. Fischer's Pink (Dianthus Fischeri) is also smothered in bloom; it is very dwarf and showy, and should rank among the choicest Alpine plants. The old double Yellow Rocket, now so seldom seen, has been a very effective plant for the past few weeks; it is usually seen in a somewhat feeble condition, and few, we fancy, have any just idea of its value, but we have seen several tufts during the past week nearly 3 ft. high, and bearing many spikes of double yellow blossoms. It is a precious border flower, and should be more extensively grown, being probably a better perennial than the ordinary double Rockets, which are so seldom seen now. Papaver nudicaule is very showy on light soils, where it grows freely and often "sows itself." The Ragged Robin (Lychnis flos cuculi) is singularly pretty by the side of water, in small islets, &c. The London Pride type of Saxifrages seem to thrive well in the shade, and are now pretty in woods where they are established. The old and of late seldom seen Iris Pavonia is beginning to appear more frequently in London gardens, and such a singularly pretty flower is welcome: it loves sandy or peaty soil and sunny warm spots. The Delphiniums and Potentillas are beginning to show effectively in the garden landscape. Double Pyrethrums are very showy where well selected; the Hairbells are beginning to blossom, and the white variety of the common Tradescantia is very beautiful. Among Alpine flowers the Rocky Mountain Epilobium obcordatum is a gem, and the true Alpine Poppy, in several varieties, is yet opening freely its fragile blooms.

A Primula for Window Gardening.—Among several plants that I have tried inside a London window, I have found none succeed better than one of my most recently-made floral acquaintances—I mean Primula verticillata, which, with its head of bright canary-yellow flowers rising on a slender stalk from a rich tuft of leaves of hoary, glistening whiteness—is now a very pleasing object, and forms a striking contrast to many town-bred Fuchsias and Pelargoniums. I had the plant of it last December, and with but little care, letting it have regular moisture, it developed itself healthily through the winter, and is now in full flower. I imagine it is rather late, in consequence of having had a good deal of growth to get up, it having been a very small plant when I first received it. Its late flowering is, however, an advantage in my case.—H. N. H.

Ragged Robin (Lychnis flos cuculi fl.-pl.).

Fringed Pink (Dianthus superbus).

Common Foxglove (Digitalis purpurea).

Gypsophila Steveni.

Gypsophila elegans.

Erect Clematis (C. erecta).

Yellow Monkey-flower (Mimulus luteus).

Canterbury Bell (Campanula Medium).

Showy Sedum (S. spurium).

Marsh Forget-me-not (Myosotis palustris.)

Peach-leaved Campanula (C. persicifolia).

Sweet William (Dianthus barbatus).

SOME HARDY FLOWERS OF THE WEEK IN LONDON GARDENS.

MOSS ROSES FOR MARKET.

One of my neighbours grows the Moss Rose largely for market; he has about two acres of it in various spots,some being on a warm border, sheltered from the north by a wall, others growing under orchard trees, and the remainder in open quarters. This arrangement is admirable, inasmuch as it admits of a lengthened season of cutting—the border plants furnishing the earliest bloom; these are followed by those under the trees, and the exposed plants come in latest. The common Moss Rose, so well known in gardens, is not largely cultivated, as it is neither robust nor free enough for market purposes, the sort most in favour is a deep red kind, perhaps a little less mossy than the common Moss, but the flowers are produced in great abundance, a strong shoot bearing seven or eight good buds, all of which will open well, but it is not desirable that they should be too much expanded before cutting, as the mossy surroundings of the flower are then less noticeable. The Moss Rose is cultivated much in the same fashion as the Raspberry, with this difference, that its old wood does duty for two or three years before it is cut away. Good, established plants are, however, so productive of young growth from the base that it is better to keep the bushes well thinned out, both of old wood and also of the weakest of the season's growth. No form of budding on any kind of stock could give the fine results obtained from these plants on their own roots. Ordinarily the Moss Rose thrives well under orchard trees, and probably there is no better paying under-crop, for with the shelter the overhanging boughs afford there is little danger from frost, although there is some harm resulting to the young growth in open quarters, when late white frosts prevail. As suckers are sent up so freely from strong stools, the plan of increasing the plants is to lift all the outside growths and plant them in rows, in clumps about 3 ft. apart, the rows being 4 ft. asunder. For the first two years dwarf-growing crops may be taken from between the rows, but after that the plants, if they have done well, will want all the space. During the winter the old wood is cut out, and, as I have said, also the weakest of the young growth; the robust shoots, too, are shortened back, the soil is lightly forked over, and a good top-dressing of long manure applied; thus treated, they remain until the buds are ready for cutting. A quarter of good established plants furnishes a large yield of bloom. A. D.

Border Flowers that should be Sown now.—Bright weather having at last set in, hardy flower borders are every day becoming more interesting, biennials being largely in bloom and making a grand display. Sweet Williams, Canterbury Bells, Foxgloves, Columbines, Pentstemons, and many other summer-flowering plants, are at present in beautiful condition. Stocks of various kinds are just over; these have filled the garden with a rich perfume, and, succeeding the Wallflowers and Violets, have kept the air deliciously sweet. By the expenditure of a small sum in seeds now it is possible to ensure a glorious display of hardy border plants next season. Those mentioned above are amongst the most popular of biennials, but there are numerous others just as easily grown, and as rich in perfume and beauty. Pansies of various hues sown now and planted out in the autumn will bloom most abundantly all through the succeeding summer.—A.

Eremostachys laciniata.—This stately border plant, which seems to be little grown, is now in flower with me, and is producing a remarkable effect. It is a member of the large and interesting family of Labiates. It has formed an erect, woolly flower-stem, about 6 ft. high, the upper portion, for some 2 ft. 6 in., having whorls of large purplish flowers (the lower lip dull crimson), 2 in. to 3 in. apart, and the lower part clothed with rich green, deeply-cut leaves, gradually decreasing in size towards the base, which is surrounded by leaves much of the same character, but larger, more horizontal, and more deeply cut into segments; the fine, rich green, elegantly cut leaves, form a fine base to the strong, whitish, very woolly flower-stem, and constitute one of the chief beauties of the plant. Such plants as this Eremostachys require room, but are very effective, and well worth growing, breaking up uniformity by their height, foliage, and peculiar colour, and catching the eye very readily, something like a church spire in a landscape. I may mention that this Eremostachys seems to like a light, rich, loamy soil; it is perennial and quite hardy.—W. W. S., *Worthing.*

CLASSIFICATION OF BAVARIAN PRIMROSES.

The following is a list of our Primulas, with synonyms and varieties; perhaps it may be of interest:

I. **Primula farinosa** (L.)—Varieties—White, dark purple, denudata (Koch.), stricta (Hornemann), farinosa acaulis (Backhouse), scotica.

II. **P. longiflora** (Allioni).

III. **P. acaulis** (Jacquin).—Syn. P. veris—acaulis (L.), P. grandiflora (Lamark), P. sylvestris (Scopoli). Varieties—1, flesh-coloured, fl.; 2, caulescens; 3, acaulis × officinalis (Muret); 4, subacaulis × officinalis = brevistyla (D.C.); 5, subacaulis × officinalis = flagellicaulis (Kerner); 6, acaulis × Columnæ = Ternoviana (Kr.); 7, acaulis × elatior = digenea (Kerner).

IV. **P. elatior** (Jacquin).—Syn., P. veris—elatior (L.). 1, var. media (Peterm.), elatior × officinalis; var. 2, a yellow circle round the base of the flower; var. 3, with red flower.

V. **P. officinalis** (Jacquin).—Syn., P. veris—officinalis (L.); 1 var. ampliata (Koch; syn., ed. I.)

VI. **P. suaveolens** (Bertolon).—Syn., P. columnæ (Tenore); P. Tomasini (Gren. and Godefroy). Var., P. inflata (Lehman)—officinalis × columnæ.

VII. **P. auricula** (L.)—Varieties—ciliata (Moretti) = Balbisii (Lehmann); P. leucantha (Hegetschweiler); P. Göbelii (Kerner)—auricula × villosa; P. obovata (Huter.)—auricula × tirolensis (Schott); P. venusta (Host.)—auricula × carniolica; P. discolor (Leybold)—auricula × Daonensis; P. Portæ (Huter).—subauricula × Daonensis; P. Arctotis (Kerner)—subauricula × hirsuta; P. pubescens (Jacquin) superauricula × hirsuta. Syn., helvetica (Schleicher) = rhaetica (Gaudin) = alpina (Reichenbach).

VIII. **P. alpina** (Schleicher). Syn., P. rhætica (Koch).

IX. **P. pedemontana** (Thomas).

X. **P. villosa** (Jacquin).—Schott, not Koch. Syn., P. ciliata (Schrank) = P. hirsuta (D.C.)

XI. **P. viscosa** (Allioni).—Syn., P. hirsuta — Villars, not Allioni = P. graveolens (Hegetschweiler) = P. latifolia (Lapeyr).

XII. **P. hirsuta** (Allioni).—Syn., P. viscosa (Vill., and Godefr., non Allioni = P. villosa (Koch). Var., P. Berninæ (Kerner)—-hirsuta × viscosa. Syn., P. graveolenti-viscosa (Christ.).

XIII. **P. œnensis** (Thomas — Schott).—Syn., P. Daonensis (Leybold).

XIV. **P. carniolica** (Jacquin).

XV. **P. spectabilis** (Trattinick).—Syn., P. Clusiana (Tausch); P. Polliniana (Moretti; P. integrifolia (Pollini); P. carniolica (Pollini); P. calycina (Duby).

XVI. **P. integrifolia** (L.).—Syn., P. Candolleana (Reichenbach). Var. 1, P. Muretiana (Moritzi)—subintegrifolia × viscosa; syn., P. Florkeana (Wegelin). Var. 2, P. Dyniana (Lagger)—subintegrifolia × viscosa.

XVII. **P. Allioni** (Loiselenur).—Syn., P. glutinosa (Allioni).

XVIII. **P. glutinosa** (Wulfen).—Var. 1, P. salisburgensis (Flörke)—subglutinosa × minima. Var. 2, P. Flörkeana (Schrader)—subglutinosa × minima. Var. 3, P. biflora (Huter.)—Flörkeana × minima, or minima × salisburgensis. Var. 4, P. Huteri (Kerner)—Flörkeana × glutinosa, or glutinosa × salisburgensis.

XIX. **P. minima** (L.)—Var. 1, P. Sturii (Schott)—minima × villosa. Var. 2, P. pumila (K.)—minima × œnensis. Var. 3, P. intermedia (Portenschlag) — minima × Clusiana; syn., P. Flörkeana (Sulzer). Var. 4, P. Facchinii (Schott)—minima × spectabilis; syn., P. Flörkeana (Facchinii).

XX. **P. Wulfeniana** (Schott).—Var., P. Venzoi (Huter)—Wulf. × tirol. (Schott).

XXI. **P. tirolensis** (Schott).—Syn. P. Allioni (Koch).

XXII. **P. marginata** (Curt.).

The genus Primula is still so much in confusion that a monograph of it with good coloured drawings would be a great boon for botanical libraries. Nobody would be more competent to describe it than Prof. Kerner, of Innspruck. Otto Forster.

Augsburg.

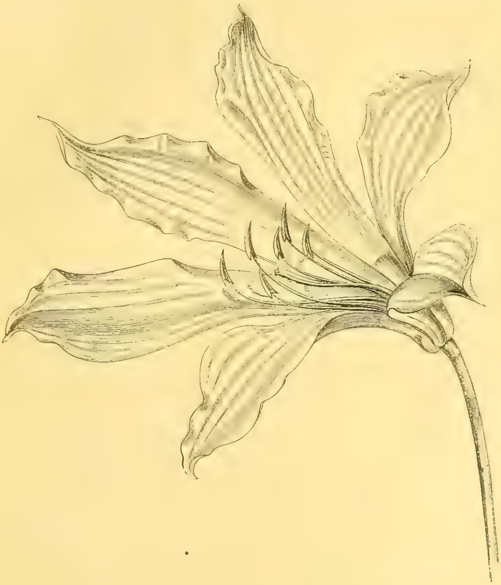
Chlorogalum Leichtlini (Camassia alba) has just gone out of bloom in the open border, and appears to be perfectly hardy. It has stout, Tritoma-like leaves, and throws up a rather tall spike of pale, straw-coloured flowers, which look very pretty when expanded in the sunshine. When better known it will be grown in every good collection. Slugs are very partial to its flower-stems.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

GREAT ST. BRUNO'S LILY.

(ANTHERICUM LILIASTRUM).

The order in which flowers are produced in the case of many plants is very singular. Nearly all species, the flowers of which are borne in indefinite spikes, as in those belonging to Agave, Delphinium, and Lupine, develop the lower blossoms first, the upper ones gradually expanding towards the top until the inflorescence is complete. In many of the tropical species of Angræcum, however, the reverse of this order is observable, for here the terminal flower on the spike opens first, and the one at the base last. Again, in Vanda Lowi, which bears numerous waxy flowers on a slender pendulous spike, the two first flowers, that is, those at the base of the spike, are coloured differently from the others, and they are fragrant, while all the others are scentless. In the tall yellow Asphodel, now everywhere in bloom, the flowers open promiscuously throughout the entire length of the spike. The large-flowered St. Bruno's Lily affords another example of singular floral development. Its pearly white, delicately perfumed flowers are normally borne on tall erect spikes; but, in addition, we recently saw plants each of which bore solitary blossoms, fully twice the usual size, at the base of the flower stem, and quite distinct from it, the flower-bud pushed through the soil on a little stem of its own. Our engraving shows a flower of this kind, exactly natural size, and in length of petal and general contour closely resembling some of the Pancratiums.

B.



Abnormal bloom of St. Bruno's Lily.

—— When visiting the Wellington Road Nurseries recently I noticed the following varieties of the St. Bruno's Lily, not hitherto known to me, viz., A. Liliago majus, the tallest-growing of them all, producing a long and fine spike of flowers, the petals of the individual blooms being tipped with green; A. algeriense, of much dwarfer habit, but with exactly similarly shaped flowers to those of the last-named variety, colour a pure white, without the green tips; A. graminifolium, with slender, Grass-like foliage, and the smallest flowers of all—indeed almost insignificant, save as a variety. There was also another variety just received from Algiers, named A. bicolor, which had not yet bloomed, and of the merits of which no account had been furnished. I there also learned the probable origin of the name of a so-called new variety of Anthericum, sent to me recently from the Continent under the name of A. Renarni, and which turns out to be simply A. Liliago, another designation of which variety is St. Bernard's Lily; this, in its Latin form, would be Anthericum Bernardi, and, if indistinctly written on a label, might easily be read Renarni. —W. E. G.

—— Your notice (p. 540) of the extraordinary peculiarity of St. Bruno's Lily in sending up large single flowers from the root, which open before the flowers on the spike, reminds me of the same thing in Hemerocallis Middendorfiana, but with a difference. In the Hemerocallis the flowers are produced in spring in the ordinary way on long foot-stalks, but in autumn other flowers are produced which are absolutely sessile. It is a very curious character in the plant for which it is hard to account, and which I have never seen noticed in any published description of the Hemerocallis.—H. N. Ellacombe.

The Double Yellow Rocket.—The double yellow Rocket (Barbarea vulgaris fl.-pl.) is one of the "old-fashioned plants" that one would again like to see in our borders now and then. The spikes of rich yellow are showy.—V.

ALPINE FLOWERS ON THE PYRENEES.

I am in the realm of the Queen of Saxifrages, and a mighty region she has for a kingdom! thousands upon thousands of her silvery cushions stud the precipices as high as the eye can reach; some of them must be at least 18 in. in diameter, and have taken some years to arrive at a flowering condition. The ordinary cultivator of Saxifrages can form no idea of the splendour of this truly regal plant from the miserable specimens that are usually seen growing in pots in collections. Ramondia pyrenaica is here in great numbers; I selected several varieties of it. There are thousands of acres of Ranunculus Gouani, Globe-flower (Trollius), various Narcissi, Irises, Anthericums, Gentians, and innumerable Orchises. I made two journeys from Luz to Gedre, where I called upon M. Bordere, a schoolmaster, and a great lover of plants. He has a small factory in which he arranges and makes up herbariums, which he disposes of to visitors, and sends away to all parts of Europe. He has a collection of portraits of Englishmen, amongst which I saw those of Backhouse, Maw, Churchill, Packe, &c.; these he is proud to show visitors. From Gedre to Gavarnie is one beautiful panorama of plants, among which are some of our finest Alpine flowers. Here I saw Fritillaria pyrenaica in the meadows, the white form of Hyacinthus amethystinus, sheets of Androsace villosa, Saxifraga aretioides by thousands, and S. pyrenaica innumerable; these two last grow together here; Draba aizoides is also abundant. Higher up I found Saxifraga cæsia, Ranunculus Thora, and the lovely Cystopteris montana in immense masses; Gentiana verna, Primulas, Pinguicula grandiflora, and P. alpina, abound everywhere where the earth is moist. I also saw Ranunculus gramineus at Gavarnie. At Barrèges I saw many acres of Ranunculus pyrenaicus growing on the hottest slopes, and in full flower; also Pulmonaria cœrulea, a lovely plant, and by far the best of the Pulmonarias. Daphne Cneorum, D. Mezereum, and Rhododendron ferrugineum clothe some of the slopes. Androsace carnea is plentiful hereabouts, and what a grand plant Adonis pyrenaica is!

Wm. Elliott.

Hotel de l'Univers, Luz,
Hautes Pyrenées.

Tyerman's Groundsel (Senecio pulcher).—I obtained the seeds of this from a friend residing in Buenos Ayres, who collected them in the interior of the country, but did not name the exact locality. Six years ago I had but one solitary plant of it from a goodly packet of seed, and up to this time I have not succeeded in saving any seed. It is, however, readily increased by means of root-cuttings. In the "Botanical Magazine" it is said to be an annual, which is certainly not the case. On the contrary, I find it to be a free-growing, hardy perennial, growing about 2 ft. high, and flowering late in the autumn; indeed, I know of no more gay or interesting autumn-flowering, hardy border plant. It proves hardy with Mr. Nelson, near Norwich, who is charmed with it. I have given it to all botanical gardens and most of my friends. I may add that Ixias, Sparaxis, Babianas, and Tritonias are gay with me, though the weather has been much too dry and cold for the generality of Cape bulbs. Lachenalia tricolor and Nerine undulata stood out with me and flowered as freely as under glass, although the past winter was unusually severe even for Cornwall, the thermometer on one occasion indicating 14° of frost. Bulbs properly so called were uninjured, but tuberous-rooted and semi-evergreens, half-hardy Cape and New World plants were much injured. Fruit crops, except Currants and Gooseberries, will be very light.—J. Tyerman, *Penlee, Tregoney.*

A Ribbon Border early in June.—Our ribbon border is now in full beauty, and when bedding plants have just been put out, and scarcely yet become established, it is in beautiful condition. The front line, Golden Feather Pyrethrum, has assumed its golden tint; the next row, Viola cornuta Perfection, is thickly studded with flowers, and the third line is the pretty variegated Dactylis. The back ground for the border consists of a row of young plants of Pinus Cembra, which, being very dark green, exhibits the flowers in front of it to much advantage. Such a border as this may be had without any great cost or trouble. Another good border—a fit companion for that just described—may be arranged as follows:—In front put the delicate blue Viola cornuta, then Iberis gibraltarica, which produces such fine heads of white blossoms, and let the third row consist of the bright red double hardy Pyrethrums, than which there are no more beautiful plants at this season. As a back line for these a row of young bushes of Retinospora plumosa aurea, full of its fine golden buds, would be now most appropriate. There are many places in which a piece of bordering, such as I have mentioned, would be very interesting at this comparatively early season of the year, before the bedding out department becomes attractive.—R. McK.

Climbing Roses and their Uses.—What can be more beautiful (says Mr. William Paul, in the "Florist,") than an Ayrshire or Evergreen Rose scrambling up the stem of some old tree, which is probably bare of branches for the first 10 ft. or 12 ft. from the ground-line, although its lofty head is a fine feature on the outskirts of a lawn or shrubbery? Deftly and rapidly these Roses twine and wind themselves around the rugged trunk till they reach the branches above, where, spreading and bending downwards, the clusters of flowers gracefully intermingle with leaves and branches, moderating the glare of the skyward openings. Climbing Roses are equally well adapted for trailing over arcades, arbours, and rustic temples. For the purposes just indicated, the Ayrshire, Evergreen, and Multiflora Roses are the best. They grow vigorously when well fed, often making shoots 10 ft. to 12 ft. long in one season. They are very hardy, and, when fairly established, flower most abundantly. For low fences, the Hybrid China, the Hybrid Bourbon, and strongest-growing Hybrid Perpetuals may be used; and if a wall with a south aspect requires to be covered, whether high or low, some few of the Noisette, Tea-scented, and Banksian Roses are the very best kinds that can be planted. The general management of Climbing Roses is familiar to everybody. The Banksian Rose alone requires special treatment. It is common to hear of this Rose growing freely, but flowering sparingly. This is usually due to the system of pruning. Very little pruning is, in this case, necessary. The gross shoots should be stopped during the growing season, and the thin wiry shoots removed early in the spring. The aim should be to obtain and preserve a goodly number of moderate-sized, well-ripened shoots, for it is such, and such only, that produce flowers.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Iris Darius.—This is the name of a singularly beautiful and distinct variety of Iris, in the collection at the Exotic Nursery, Tooting. The uprights are yellow, and the falls netted with purplish markings, distinctly edged with yellow. It, like others of the family, may be compared, as regards beauty, to some beautiful and strange Orchid.—V.

Lathyrus Sibthorpi.—This is a beautiful early flowering Everlasting Pea, deserving of general culture. I raised my plants from seed obtained from Mr. Thompson, of Ipswich. It is not so strong in growth as the common Everlasting Pea, but it is a lovely border-flower, or for banks or the rougher parts of the rock garden.—U.

Pyrethrum aureum laciniatum.—This, which is being distributed by Messrs. Osborn, of the Fulham Nurseries, promises to be a desirable acquisition as a flower garden plant. It is a distinct, finely divided form of the popular Golden Feather, which is itself a variety of the common Feverfew. It is quite hardy, dwarf, and its delicately cut foliage has a very chaste appearance. This plant has received first-class certificates wherever it has been exhibited.

Woodruff and Ivy.—Having never elsewhere seen these two plants together, as I have for many years had them, a note on the subject may be useful. Banks and mounds clothed with common English Ivy are useful as boundaries, and to fill up angles and odd places. We have such a bank enclosing a play-ground, to which it forms a distinct boundary, while adding to it a peculiar charm. This bank was originally edged on the inner side with Woodruff, which has spread all over it, so that in the month of May, the new and brilliant growth of the Ivy, a mass of glistening green, is sprinkled all over with the white flowers of the Woodruff, which push through just enough to show themselves, as if they belonged to the Ivy, and there for three or four weeks they shine like a new snow-shower in the sun, and when they disappear there is not a chaffy stem or remnant to be seen. In another place we have a border filled with Hollies and surfaced with English Ivy, amidst which are planted yellow Crocuses and Woodruff. In March the Crocuses flower amongst the old leaves of the Ivy; in May the Woodruff flowers amongst the new leaves of the Ivy, and for the rest of the year the Ivy shines alone, a fitting ground-work to the shining Hollies above, and doing something towards making a garden in which there is not an inch of bare earth visible.—"Gardeners' Magazine."

THE INDOOR GARDEN.

THE GENUS CHYSIS.

This beautiful class of Orchids comes from Central America; they are all deciduous epiphytes, and have been frequently met with suspended from the larger branches of trees by their roots alone. The pseudo-bulbs, which, after the leaves have fallen off, remind one of those of a Cyrtopodium, are fleshy, spindle-shaped, pendulous, and often turning up at the tips; leaves arching, plicate, veined, and sheathing at the base; flower-spikes produced with the young growth, pendulous; flowers several on a spike. The different varieties of this genus resemble each other so much in the general characteristics of their growth and flower (except in the colour of the latter) that their proper specific names have been a matter of some discussion among botanists; for example, C. Limminghi was said to be a variety of C. aurea, and named C. aurea v. maculata; C. bractescens was said to be a variety of C. aurea, but it differs from that variety in several minor points, and more particularly in being furnished with cucullate, leafy bracts, which are wanting in C. aurea; C. lævis, also referred to C. aurea, has the bracts as in C. bractescens. Whatever affinity they may bear to each other botanically they have been found under cultivation to be sufficiently distinct to warrant the preserving of their several distinctive names, and this course appears the more reasonable when we take into consideration the marked difference in the colour of their flowers. Blooming late in spring and early summer they make fine exhibition plants, and by judicious management they may be kept in beauty for a long time. All the varieties thrive best in baskets or pots suspended from the roof of the Orchid-house, the material used for growing them in being two-thirds fibry peat and the rest Sphagnum Moss and charcoal in lumps about the size of eggs. On throwing up their new growths, provided they be strong enough to flower, the plants should be but sparingly supplied with water until the flower-spikes are visible and are seen to be getting ahead of the growth, when water may be more freely given; after the flowering time they should be removed to a warm, moist, airy house until the pseudo-bulbs have attained their full size and the leaves begin to turn yellow, when water should be gradually withheld, and in a few days the plants removed to a cool house—about 55° by day and 50° at night—and kept dry for the winter; managed in this way they are amongst the most easily grown and free-flowering of Orchids. Occasionally some of the varieties of Chysis (particularly C. aurea) make a second growth and flower at the latter end of the summer; and, although this is detrimental to the plants in the long run, when it does occur the growth should be encouraged until completion in a warm house, and the plants should be afterwards rested in the ordinary way, when they may be again brought round to their usual time of flowering. Plants of Chysis when properly treated are not liable to the ravages of insects; the common thrips sometimes attack them, but they may easily be kept down by sponging the leaves with weak Tobacco-water. The plants are propagated by making an incision halfway through the running stem at the base of the back pseudo-bulbs when the leading growth starts; on the leading growth attaining a height of about 2 in., provided it does not show flower, the severance at the point where the incision was made may be completed, and the back pseudo-bulbs will soon start a new growth, when they may be removed to form a separate plant; should the leading growth show flower, the completion of the dividing had better be deferred until the plant has ceased flowering.

C. aurea.—This beautiful species was first found growing in the valley Cumancoa, in Venezuela, whence it was imported into this country in 1843, and was at that time the first and only one of the genus in cultivation. It has the same general appearance as the other varieties enumerated, the flowers, several on a spike, are from 2 in. to 3 in. in diameter, sepals and petals yellow, often spotted with orange, lip white and yellow streaked with crimson; it is rather capricious in its time of flowering, but blooms generally in May or June, and lasts about a fortnight.

C. bractescens.—A Mexican variety of great beauty, introduced by the late Mr. George Barker in 1840. The pseudo-bulbs are about 1 ft. in length; the flower-spikes bear each from four to eight flowers, each flower being from 2½ in. to 3 in. across, sepals and petals white, lip golden-yellow streaked with crimson. The flowers, which are wax-like and well-formed, remind one forcibly at first sight of a Phalænopsis grandiflora, and hence it will be easily understood that the plant has great pretensions to beauty. It blooms in May and June, and lasts two or three weeks in beauty.

C. lævis.—This beautiful variety appears to be nearly allied to C. aurea, from which it is distinguished by its longer flower-spikes, and by the middle lobe of the labellum being shorter than in that variety. It is a native of Guatemala, and has pseudo-bulbs from

12 in. to 15 in. in length, furnished with large, plicate, light green leaves; the flower-spikes are pendulous, bearing from six to nine flowers upon each; the flowers are fleshy, from 2½ in. to 3 in. across, sepals and petals yellow, stained at the tips with orange; lip, pale orange blotched with red; it is one of the most beautiful of its class, but, probably on account of its rarity, seldom met with in collections. It blooms in May and June, and lasts about three weeks in perfection.

C. Limminghi is a lovely variety from Guatemala, with pseudo-bulbs from 9 in. to 1 ft. in length, bearing lanceolate-acuminate leaves, about 6 in. in length, the plant having the same pendulous habit as all the other varieties; the flower-spikes, three of which are often produced from a single growth, bear each from four to six flowers, sepals and petals waxy-white, blotched or stained with lilac-rose towards the tips (more markedly in some varieties than in others); the labellum, as in the other Chysis, is three-lobed, the middle lobe, which is the largest, being pale lilac streaked with purple, and the two lateral lobes yellow streaked with crimson, the rich and clear markings of the lip showing to great advantage when contrasted with the delicate colour of the sepals and petals. It flowers in April and May, and lasts about three weeks.

C. undulata.—Under this name a very fine variety is to be met with, in a few collections, but whether the name be correct or not, I am unable to say. It appears to be a very fine form of C. lævis; the pseudo-bulbs are from 1 ft. to 1½ ft. in length; flowers, from six to twelve on a spike; sepals and petals, orange-yellow; lip, yellowish-white veined with rose. If it be a true species and be imported in quantity, and continue to bloom as well as the few specimens at present in this country, it will prove to be one of the best of the class.

C. Chelsoni is an interesting and handsome hybrid, raised by Mr. John Seden, at the establishment of Messrs. Veitch, of Chelsea. It was raised from seed of C. Limminghi crossed with C. lævis; the pseudo-bulbs resemble those of C. bractescens; flowers, several on a spike; sepals and petals, nankeen; labellum, creamy white, with numerous rich violet-purple markings. It is a desirable kind, and well worthy of being placed by the side of the others of the genus; it flowers in May and June, and lasts about three weeks in perfection.

JAMES O'BRIEN.

STRIKING CUTTINGS IN WATER.

IT is amusing to see (p. 572) a writer theorising on the advantages of water over soil and sand for striking cuttings, in the face of the fact that cuttings are struck by hundreds of thousands every year in sand and soil without any difficulty or appreciable loss. The water plan is an old and discarded practice that has been tried and found wanting, and which will, no doubt, be consigned to oblivion again as soon as some of your readers in search of novelty have satisfied themselves as to its merits (?). Thirteen years ago it was recommended and tried here, but only once. I found all the apparatus here when I came, which consisted of trays, &c., for holding the water and cuttings. For the sake of curiosity I tried a few hundred miscellaneous bedding plants, such as Verbenas, &c., in the water with due care, and lost 50 per cent. of them at least, while of those put into 5-in. pots at the rate of about 100 to a pot and plunged in a gentle hot-bed I hardly lost one. Those which did root in the water looked in the last stage of starvation, and were only saved by being transferred to their natural rooting media—soil and sand. It is seldom convenient and never advisable to pot cuttings off the moment they have struck root and are lifted out of heat, for they are too tender, and for this very practical and good reason cultivators place a layer of light rich soil below the top layer of sand, or they mix the two together, in order that the young plant may have a supply of proper food as soon as it forms roots; whereas by the water plan, unless they are waited upon attentively as they strike, they must adapt themselves to their aquatic circumstances in the best way they can. "The labour of draining and filling pots with compost," &c., and the "immense saving of labour and space" are not worth mentioning. I have for years in succession struck 50,000 cuttings of all descriptions between the end of February and the beginning of May in a three-light manure frame without losing more than 5 per cent., and I did not use above a few barrowsful of soil, sand, and crocks for all. Cuttings could not be struck in less space in water than in soil, for we are in the habit of putting cuttings of Verbenas, and of similar plants in at the rate of 100 or more to a 5-in. pot—in fact, as thick as they will stick.

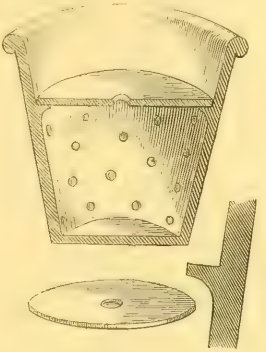
J. S.

Pot Roses for the London Market.—Mr. Philip Ladds, of Bexley Heath, has now several houses over 300 ft. long solely for the growth of Roses for the London market. Niphetos, Isabella Sprunt, and Safrano, are the sorts grown.

A NEW POT FOR ORCHIDS.

OUR illustration represents a new form of pot for Orchids, samples of which were recently exhibited in London by Mr. Matthews, of Weston-super-Mare. Cultivators are well aware that epiphytal Orchids require but very little root-space when grown in pots; hence the pots have hitherto been partially filled with crocks (a snug harbour for cockroaches and woodlice) over which the compost has been placed. This plan answers tolerably well in practice, but the soil is often washed down among the drainage in watering, and the result is that the pot ultimately becomes clogged and the compost stagnant. In order to obviate this disadvantage Mr. Matthews has invented a pot for Orchids, of which the accompanying illustration is a section, and in which a circular earthenware disc is made to replace the mass of crocks that formerly were below the compost, the perfect drainage and aëration of which is secured without any danger from overwatering or the water remaining stagnant in the compost. A circular disc with a hole in the centre is found amply sufficient, for all superfluous moisture readily passes away; but a lattice-work disc of earthenware can be substituted if thought preferable by individual growers. The new invention is simple, and has already been used with excellent results in many good collections.

B.


A New Pot for Orchids.

BOUGAINVILLEAS AND THEIR CULTURE.

THESE rank amongst the very finest of stove plants, especially for covering a back wall or training on the roof, where, if the long drooping branches be allowed sufficient freedom, they have a charming effect. B. glabra is the freest-flowering of all the species; it blooms well even in a small state, and when it has room enough to attain a considerable size, it will keep in beauty during most of the summer. It is the best of the family for pot culture, either for the decoration of the stove or for exhibition purposes. Some account of the growth and flowers of this species will suffice as regards all the others. Bougainvilleas differ in many respects from all other cultivated plants, especially in the general appearance of the blooms; these are small and comparatively inconspicuous, not unlike the individual florets in a Lantana; they are associated with large bracts, which, when they are small and first appear, are green and almost the colour of the leaves; but, as they approach full size, about 1½ in. in length by 1 in. in breadth, they assume a beautiful mauve colour, and last, with little change, for weeks, the strong shoots producing a succession that keep on opening for a considerable time. As fresh growth is made, the flowering is prolonged with little interruption until autumn, especially when grown in a brisk heat. There is one peculiarity about B. glabra, that is, it will flower profusely in a cool intermediate house when planted out, but rarely makes much bloom when its roots are confined in a pot, unless it is grown in a high temperature. It also yields a much longer succession of flowers when in a warm situation than in a comparatively cold one. The inflorescence of all the species are unequalled in a cut state for filling large vases, and they are equally suitable for bouquets, lasting longer with little or no moisture to support them than most flowers. They are all strong growers, and require a considerable amount of root-room to enable them to make growth sufficiently to show their true character; they will thrive in either peat or loam, yet the latter appears to suit them best.

I have already said that B. glabra is the most suitable for pot culture. It does not require a long rest in winter, consequently it may be started in the year. From plants so treated cuttings may generally be obtained by the beginning of March. These should be taken off with a heel as soon as they are 6 in. long, inserted singly in small pots with a little drainage, and filled with three parts fine loam to one of sand; they should be covered with a propagating glass, and placed in a night temperature of 70°, allowing it to rise 8° or 10° with sun-heat. Keep them moist and shade them from the sun, and they will root in a few weeks, when they may be moved into 6-in. or 7-in. pots, filled with loam mixed with one-fifth rotten-manure, and as much sand as will keep the soil sufficiently open to allow the water passing freely through it. After the plants get fairly established in the new soil they will need very little shade, but must have plenty of water, as when growing they will bear more moisture at the roots than most hard-wooded subjects. Syringe overhead in the afternoon, and raise the temperature 5°; by the middle of May pinch out the points to induce them to form several shoots; about midsummer they will, if all goes well, have filled their pots with roots, and should be moved into others, 10 in. or 12 in. in diameter, now using the soil in a more lumpy state than when the plants were smaller, adding a similar quantity of rotten manure and sand; place four or five sticks 4 ft. in height in the soil just inside the rims of the pots, round these train the shoots, tying them loosely, so as to give just the requisite support and keep them from getting entangled. Give air early in the daytime during spring and summer when the temperature of the house runs up to 80°; but close in the afternoons with the sun upon the glass, and continue to syringe overhead, and give plenty of water to the roots as soon as they have got well hold of the soil. This Bougainvillea is naturally so free in flowering that the plants will no doubt bloom in this stage of their growth; but, if the object be to grow them on to a large size, it will not be advisable to remove them when in flower to a conservatory, or similar cool house, so as to retard their progress. If, on the contrary, small-sized decorative plants be deemed the most desirable, they can be placed in a cooler situation during the summer months, but when used for such purposes this Bougainvillea requires to be treated in a way that few plants would bear.

When the flowers are about half grown, and before they have begun to colour much, the plants should be removed to the cooler house in which they are all to remain when in bloom; for if allowed to stay in strong heat until the flowers are fully matured, the check which they receive in that state generally causes them to fall off in a few days after they are placed in cooler quarters; whereas if they be moved as recommended above, whilst the flowers are growing, they will not only come to maturity, but last double the length of time—often five or six weeks—which they would in a high temperature, and the colour will also be many shades deeper. Yet it is not advisable to allow the plants to remain in too low a temperature too late in the season. By the middle of September at the furthest they should be returned to the stove, being likely to suffer if the night temperature of the house drop below 48°. When replaced in the stove, no more growth should be encouraged during the autumn, as there would be difficulty in getting it ripened up before winter. To prevent this, water should be withheld until the plants flag considerably, then giving only a little to freshen them up, but not so as to fully moisten the ball, gradually drying them off in this way until only enough moisture exists in the soil to prevent its becoming absolutely so dry as to endanger the roots perishing. This they will not do so long as even very little moisture remains, as before that takes place the leaves will have become ripe and have fallen off. Keep them in this state during the closing months of the year in a night temperature of 55°, with 5° rise during the day. Where it is wished to extend the flowering as far as possible, they may be started early in January, raising the temperature 10° day and night, cutting out all the weakest shoots not strong enough to produce flowering wood; at the same time turning them out of the pots, removing any loose soil not occupied by roots, afterwards placing the ball in a pail of tepid water for eight or ten hours, so that it may get soaked right through, otherwise difficulty will be found in getting it properly moistened, without which the growth will be weak. After this immersion return the plants to the stove for a day to allow the soil to drain, and then put them in the pots in which they are to remain for the season. If they be not required much larger than the size they attained the previous year, they need not have pots above 2 in. larger than they have already occupied, using soil similar to that in which they have hitherto been, but with a little more manure in it. They should now be trained on wire trellises proportionate to the size to which they are intended to be grown. Syringe them every afternoon; in three weeks they will push young shoots, which will grow fast, and should, as they extend, be kept tied in an upright position; for, if allowed to hang down, it has the effect of stopping their free extension, inducing them to break back, and causing them to flower more sparingly by diverting the sap so as to prevent their getting so strong as may be desirable. As the roots begin to grow freely give plenty of water, for if ever the young shoots, after they have made considerable progress, be allowed to flag through insufficiency of moisture, they will stop growing and set flowers, but in much fewer numbers than if the growth had been stronger before they were formed. By the middle of March, as the sun gets more powerful, raise the temperature 5° at night, allowing it to run up to 80° before giving air, and keeping the plants well up to the glass. Bougainvilleas do not require shading from the sun, the flowers coming higher-coloured when exposed to its full influence. About the beginning of April the plants should be in bloom, but at this early season they ought not to be removed to a cooler house. If the flower-shoots be trained down round the trellis, the plants will push up more growth, to assist which manure-water should be liberally given every other time they are watered; when showing flower, they can be placed in a cooler situation, and be thus prepared to stand a lower temperature when in bloom, after which they can again be further hardened off and wintered as before. If, instead of thus confining them in size, large specimens be wanted, at the spring potting, instead of placing them in smaller pots, they should have more root-room, giving them, say pots 18 in. in diameter, with larger trellises to train them on. Thus managed, they will last for several years, removing each spring about half the old soil, cutting back the roots proportionately at the time of re-potting, and supplying them liberally with manure-water during their season of active growth; at this stage of growth they will bear its application every other day.

B. glabra is equally suitable for planting out in either a hot stove or an intermediate house; when so used it should be grown in a pot the first season, not stopping the shoots until they have attained a length proportionate to the place which they are to occupy; the border in which it is planted should be well prepared by being efficiently drained, and should consist of 12 in. deep of good soil, similar in character to that recommended for pot culture. From the free-growing disposition of the plant, it quickly exhausts the soil, consequently as much should be removed each spring before growth commences as can be got away without too much interference with the roots, replacing it with new, at the same time cutting back the head of the plant as may be required, but in the growing season not keeping the branches too closely tied in, a loose free disposition of them being the most effective. When planted out it should not have much water in the winter.

B. spectabilis and B. speciosa are both more suitable for planting out than for pot culture, being stronger growers than the preceding. B. spectabilis succeeds better in the temperature of an intermediate house than when grown under warmer circumstances. The treatment which it requires is similar to that necessary for B. glabra, especially as regards a free use of the knife each spring, when it has got large enough to fill the space allotted to it, always removing the weakest wood. The room allowed for the roots should in all cases be proportionate to the space which the head of the plant is intended to occupy, never giving too much soil, for being naturally a free-growing subject, it becomes difficult to keep it within bounds.

Bougainvilleas are subject to the attacks of aphides, thrips, and red spider. The two former may be destroyed by fumigation with Tobacco smoke, and the latter by a free use of the syringe. If scale or mealy bug affect them, the diligent use of the sponge and copious syringings must be resorted to, washing the plants, when cut back in the spring, with Abyssinian mixture (7 oz. to the gallon), or some other insecticide found to be effectual in destroying the pests. T. Baines.

Calceolarias Damping off.—I have a collection of these in flower, but I am sorry to say that many of them droop and shrivel up when at their best. Could "Chef" (see p. 398) kindly help me out of the difficulty?—L. T. [Isolated cases of sudden drooping and shrivelling up of the foliage often take place among greenhouse Calceolarias. It is a disease akin to, or the same as, that which affects the bedding kinds out-of-doors. Among ordinarily well-managed plants it should not occur to a serious extent. In "L. T.'s" case the cause may be defective drainage, sour soil, or over-watering; but it is most likely brought on by sunstroke during the late fine weather. I would recommend your correspondent to shade the plants and pots from strong sunshine, to keep them regularly watered, but not sodden at the roots, and to sprinkle the floor of the house in hot weather, and preserve the air cool and refreshing; of course no fire-heat must be used.—Chef.]

Selections of New Azaleas.—Many very fine seedling Azaleas were exhibited at the recent plant show in Brussels, and from amongst them we ("Florist") have selected the following, as the most desirable and novel in character:—M. Van Houtte exhibited Herman Lubbers, a large crimson, with dark purple spotting, and having a small, close petaloid tuft in the centre; and Professor E. Morren, a bright crimson scarlet, with several tiers of broad, smooth segments, forming a thin double flower; M. Jean Vervaene showed Flambeau, a very bright crimson, with small, oblong segments; Jean Vervaene, a very showy variety, with large, deep, salmon-coloured flowers, having a blotch of purple spots, and a flush of purple on the upper lobe, vermilion-red flakes scattered here and there, and a white margin formed of irregular patches running more or less inwards; Noble Belgique, very large, pale flesh colour, with purple spotting, and a broad white edge; and A. imbricata variegata, a double, with blush flowers flaked with red, the outer lobes being greenish. M. Joseph Vervaene showed a beautiful double-flowered variety named A. imbricata, as full as a good double Petunia, forming a close, solid flower; this is white, slightly barred and flaked, and of an entirely novel character. From M. Ch. Vuylsteke came Souvenir de Madame Rudolph Abel, a delicate blush white, with radiating patches of purplish spots on the upper segments, or sometimes continued also on the lower ones. M. E. Van der Cruyssen showed two Azaleas crossed with Rhododendrons, which retain the usual character in the flowers, except that they are very large. Of these Le Vengeur has the flowers of a bright, rosy pink, the edge slightly crispy, and the flowers fully 4 in. across; and Pucelle du Jardin is similar in character, with the flowers pure white.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Fancy Pelargoniums Grafted.—We are informed that the group of handsome Fancy Pelargoniums, shown by Mr. James, of Isleworth, at the recent South Kensington Show, were all worked on bottoms of the large flowering kinds. This is done when the stocks have several strong branches, and the result is found, not only in a more robust growth in the fancy kinds, but also greater longevity. The plants in question were about 3 ft. in diameter, perfect in form, and finely flowered.—"Gardeners' Chronicle." [Mr. Henry Bailey, who, as many of our readers know, is an excellent grower of fancy Pelargoniums, informs us on the other hand that his fine plants were never grafted.—Ed.

Varieties of Odontoglossum vexillarium.—Mr. Burbidge remarks in the "Floral Magazine" that scarcely two individual plants of this bear flowers exactly alike in either colour or shape. Messrs. Veitch have now several fine forms in flower, one of which is so soft and chaste in colouring that it fairly rivals all the others in delicate beauty. One of their specimens—a very vigorous one—bears ten strong flower-spikes, and Mr. David Thomson, of Drumlanrig, has a plant which has produced sixteen fine flowers from a single bulb. This noble species having recently been imported in quantity and in fine condition, we may soon hope to see it in every collection of Orchids.

CLIVEDEN IN 1876.

Cliveden, the birthplace of spring gardening, well maintains the high character which it has so long and deservedly received for the beauty of its early flowers, its banks full of wild Hyacinths, Primroses, and Forget-me-nots, its closely-shaven lawns so overspread with wild Thyme that every footstep brushes up its fragrance, and above all its flower-beds brimful of spring beauty, now (June 17) just destroyed to give place to summer bedding plants. Looking from the terrace on the lawn, a huge sunken panel with flower-beds proportionate in size on either side of it, the floral display, when we saw it the other day, was magnificent. Brilliant pink, supplied by a large circle of Silene pendula compacta set in emerald green, was conspicuous in the distance; nearer were lavender and blue, furnished by Nepeta cœrulea and Forget-me-Nots; buff, by Limnanthes Douglasi; golden yellow, by Lasthenia californica; and crimson, by the old China Rose of that colour and Rhododendrons; other colours, too, were equally striking, and these only a secondary display, that earlier and brighter being made by early Tulips. The plan is, when the Tulips are planted, to cover the surface of the beds with annuals, sown in July and August and transplanted when the bulbs are put in. These commence flowering when the Tulips are over, and remain in beauty until the bedding plants are planted out. Vasefuls of Tom Thumb Pelargoniums stand on the Grass near the walk at the base of the terrace wall, close to which is a ribbon border bright with Pansies, for which Cliveden is justly celebrated; and right and left are gardens of early flowers, arranged on the one hand in the form of a huge shell, and on the other in beds on the Grass that have been bright all the season, unfavourable though it has been, with spring flowers still in great beauty. But, brilliant as the floral display on the dressed ground undoubtedly has been, and soon will be again, it cannot arrest attention long. The eye is naturally carried beyond it to the woodclad hills and dales, the rich meadows, and the river Thames, at this season alive with water parties from Maidenhead and pleasure-boats of every description. These form the foreground, as it were, to a landscape unmatched for picturesque beauty, its distant boundary being the Surrey hills on the one hand, and the Chilterns, in Buckinghamshire, on the other. Vistas, too, have been cut here and there through the trees, so as to bring into view the water or some more distant object of interest. By reclaiming pieces of land here and there from the river, a wide and agreeable promenade has been formed along its banks, overhung at intervals by stately trees, consisting of Beech, Ash, and Elm, with here and there a Tulip tree and scarlet Chestnut. This is reached from the plateau above, on which the mansion stands, by means of winding walks and flights of rustic steps, through what may be termed a gigantic wild garden, consisting of ancient Yews, whose hold on mother earth is but small, their roots—weather-beaten and weird-looking—being half out of the ground; and tangled brushwood, fantastically overrun in places with Honeysuckle and Travellers' Joy. Here, too, even on the chalk, are masses of Ferns, and nearer the riverside a very fine Judas tree, clumps of Pampas Grass, mulberry-coloured Hazels, and other flowering and fine-leaved subjects, while in spring every open space is a garden of wild flowers.

Let us now return to the entrance front of the mansion. This we find has been strikingly improved, by removing the old kitchen garden and laying its site down in Grass as level as a bowling green, cut off from its surroundings right and left by newly-built walls, and in front by a Yew hedge, now old and much too thick, but still kept in tolerable vigour by means of good root treatment. These, with the mansion, enclose a spacious quadrangle, on the side of which furthest from the windows are large vases, that in early spring are gay with Tulips, and later in the season with annuals, the most effective of which is Silene pendula compacta, still masses of rosy blossoms. On the walls, which are covered with climbing and other wall plants, we remarked two Roses—single Persian kinds—one pale yellow, the other flame-coloured, both of which, to our mind, had a better appearance in such a situation than heavy double-flowered sorts. Honeysuckles and China Roses are also finely in flower here on walls; the former should never be pruned till they have done blooming. Elsewhere we also noticed a Rose hedge, consisting of Fellenberg, a kind not very full when open, but excellent in the bud state for table decoration. Shut out from view of the mansion by the walls just alluded to, are the glasshouses, a conservatory being on one side and the forcing houses on the other—all new, and arranged with consummate skill and forethought as regards saving of labour; the whole, with the exception of the conservatory, are built in parallel lines right and left of a central pathway, under which are the hotwater pipes, a glass-covered corridor running round the whole, and binding them, as it were, together. Close to them are the offices and young men's rooms, the latter built in a style and furnished with appliances such as are to be found in but few gardens. Grapes, Peaches, and other tender fruits are grown here in perfection, and among other things we noticed a houseful of tree or perpetual Carnations in flower, a brilliant sight—the blooms being abundant, large, and fragrant. Those who wish to have such flowers should put in cuttings now; but it will be found that old plants bloom best. Before leaving the forcing department, we should add that the extension system of Vine growing is that which is most in favour here, and that in one Vinery—an old one, 60 ft. long—one Vine has been allowed to fill the house. It is in excellent condition, and is now carrying some 200 bunches of promising fruit. Near here, too, is a glass corridor, the roof of which is covered with an aged Fuchsia of the corallina kind; several other varieties have been grafted on it, all of which are at present literally masses of flower and most effective, owing to the contrast produced by their different colours. Ivies, grown in zinc boxes and trained on trellises for indoor screens, we also saw out-of-doors here in the shade. These fit into ornamental trays, and when taken indoors have a Pelargonium, or Nasturtium, or some other flowering plant plunged in the box in front of them. The conservatory is 56 yards in length and 12 yards in width, and span-roofed, the spans being placed at right angles with the wall against which it is built. It is in two divisions, but so arranged that both can be thrown into one, which, when lighted up at night (which it is on certain occasions) has a fine effect. It is at present as gay as a house of the kind could well be—Arum Lilies, as they are called, being especially good and conspicuous. Among the more arborescent vegetation which it contains may be named Oranges, carrying heavy crops of ripe fruit; and a vigorous specimen of Abutilon Boule de Neige, loaded with drooping white bell-shaped flowers, which, when inverted in bouquets with the stamens removed, have a charming effect. Against the back wall is Lantana mutabilis, quite a mass of variously coloured flowers, exhibiting, in fact, a luxuriance of blossom wholly unattainable by plants in pots. In the open air, just outside this house, was a beautiful example of Chamærops Fortunei coming into flower—a plant that, unprotected for five winters, has remained unharmed. Here, too, was a large specimen of the variegated leaved New Zealand Flax, equally hardy, the two guarding, as it were, the entrance to this in every way well-kept and handsome conservatory.

With the noble entrance to Cliveden, most people are familiar. It consists, it will be remembered, of a straight avenue of dimensions commensurate with the palatial residence to which it leads. This remains as it always has been; but the approach in connection with it has been greatly altered and improved. On the one side we have natural wood intermixed with flowering shrubs and trees; and on the other, here and there glades of Grass, pleasantly undulated and furnished with clumps of Rhododendrons and Azaleas—some near, some distant, but all effectively planted and more or less overcanopied with lofty trees, chiefly Beeches, whose stems rise for an unusual height clear of branches. A large stagnant pond, by which the road passes, has been drained, filled up, and converted into a Grassy lawn, one side of which hugs the approach for a considerable distance, while the other loses itself in the wood on the other side of the valley. Vistas, too, have been judiciously cut through the trees where the planting and views are most beautiful, thus rendering this portion of the grounds by no means the least interesting feature of Cliveden. Of the kitchen garden, now for the most part consigned to the farm, where it ought to be, we have said nothing, nor of the miles of green drives, in summer shady and pleasant, with which the woods abound, nor of the indoor fruit-growing, which is excellent; but enough has been said to show that Cliveden, since it has become the property of the Duke of Westminster, has been greatly improved, both as regards its buildings and its gardens.

PLATE XXVI.

THE GENUS RAPHIOLEPIS.

(WITH A COLOURED FIGURE OF R. SALICIFOLIA).

THE species of this small genus of evergreen shrubs inhabit China and Japan, and some of the adjacent islands. There is also in the herbarium at Kew an imperfect specimen of a shrub from the Sandwich Islands, which may possibly belong here. The Chinese and Japanese varieties fall into two very distinct species, the one, R. indica, having a loose inflorescence, as in R. salicifolia, the other, R. japonica, having a dense, close panicle of large flowers. Those belonging to the former need the shelter of a greenhouse in this country, whilst the latter are hardy in the south and west at least. The botanical position of the genus is next to Photinia, from which it differs technically in the calyx-lobes falling off early instead of remaining on the fruit; but more striking differences are furnished by the smaller leaves, and pyramidal inflorescence. The varieties in cultivation worth attention are:—

1. **The Willow-leaved Raphiolepis** (R. salicifolia).—This is one of the numerous varieties of R. indica, and by far the handsomest of any of them in cultivation, as a reference to R. rubra (Lindley's "Collectanea," t. 3) and R. indica (Bot. Reg., t. 468) will confirm; and the variety figured under the same name in the "Botanical Register," t. 652, is very inferior in beauty to our plant. Although the species to which this belongs bears the name of R. indica, it should be mentioned that it is found in no part of India. Some of the earlier botanists gave that appellation indiscriminately to plants from the West Indies, Africa, and Asia. R. indica is a native of Southern China, and is particularly abundant in the island of Hong-kong. It is an evergreen requiring the shelter of a greenhouse in this country, and a very desirable shrub for embellishing the conservatory in early spring. A detailed description would be superfluous here, as the accompanying figure shows all and more than one could describe. It is of slow growth and compact habit, the young shoots often overtopping the inflorescence, as represented in the figures quoted. Inferior varieties were in cultivation in this country very early in the present century, and the "Botanical Magazine" figure dates back to 1815. R. Phæostemon, or Brown-stamened Raphiolepis, is another variety, but it is of no special ornamental value.

2. **The Entire-leaved Raphiolepis** (R. integerrima), Bot. Mag., t. 5510.—This species, or rather variety, for it appears to differ in no particular from R. japonica, except in having quite entire leaves, was first discovered by the officers of H.M.S. Blossom, between the years 1825 and 1829, in the Bonin Islands, and was published in the botany of the voyage (Beechey's) by Hooker and Arnott, in 1841. Subsequently the same form has been found in Japan, and even in the Korea. It is an evergreen of dwarf, compact habit, with stout, smooth branches, clothed with a light brown bark. The glossy obovate, or oblong leaves, are very thick and leathery, about 3 in. long by nearly two broad, and quite entire on the margin; and the fragrant white flowers are disposed in dense, terminal, bracteate panicles. In size, the flowers of this form are scarcely equal to some of the others, being only about three-quarters of an inch in diameter when fully expanded. From its native habitat this is probably the least hardy of the varieties of this species, but it is an exceedingly attractive shrub, and a great ornament to the conservatory or cool greenhouse. The date of its introduction into European gardens is unknown to me, but it seems to have been imported into this country from Continental gardens. According to the "Botanical Magazine," quoted above, it was first received at Kew from Berlin in 1862, and subsequently from several other places.

3. **The Toothed-leaved Raphiolepis** (R. ovata), Fl. Mag., 299.—Another form of R. japonica; indeed, this and the last together, with the intermediate varieties, may be said to constitute that species. It is a hardier shrub than R. integerrima, from which it differs mainly in its minutely-toothed instead of entire leaves, and in its larger flowers, which are white and tinged with pink in the centre. As represented in the "Floral Magazine," the flowers exceed an inch in diameter, and the bracts of the inflorescence are

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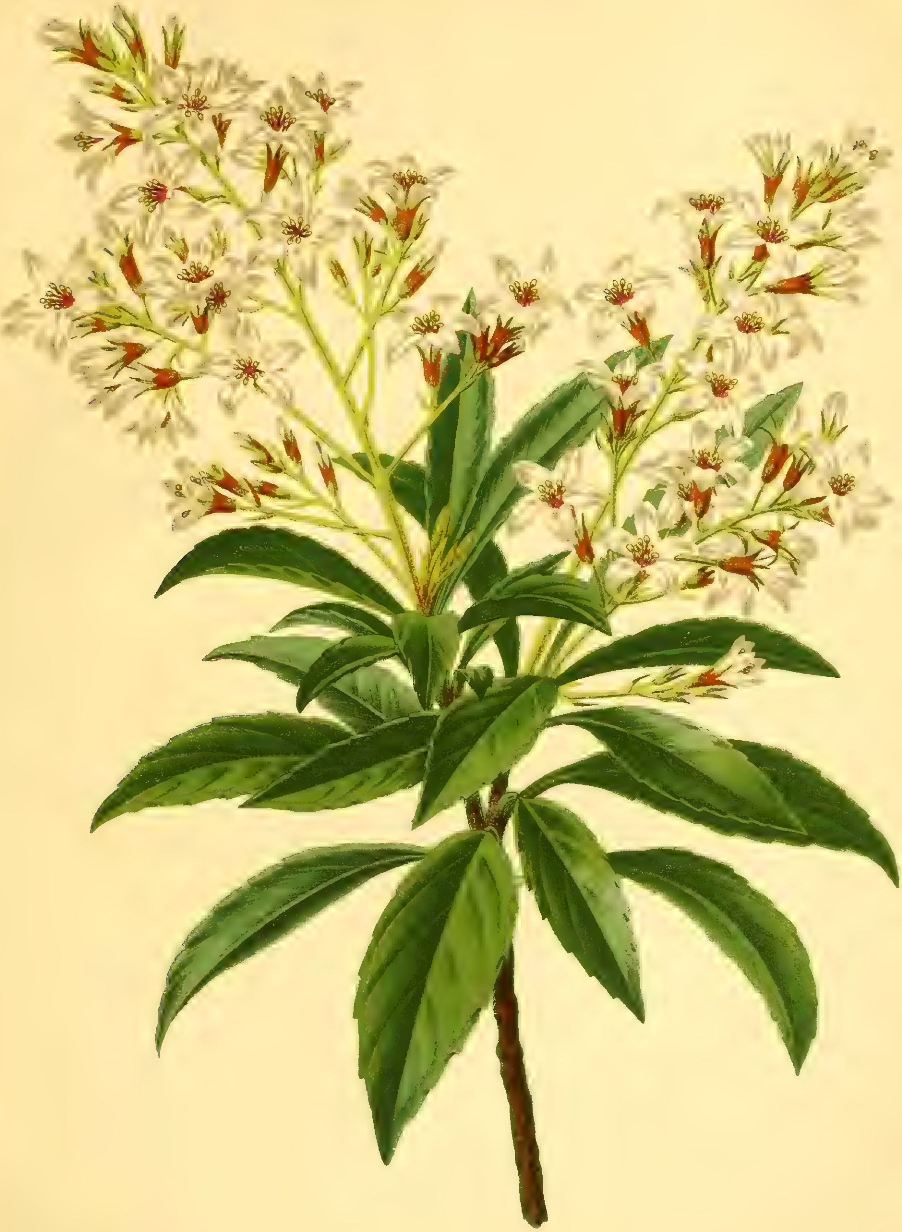


RAPHIOLEPIS SALICIFOLIA.

brown instead of being green and minutely fringed as in the foregoing. The flowers are succeeded by globular, glaucous, purple berries, resembling those of the Portugal Laurel. In a young state the branches, bracts, flower-stalks, and calyxes, as well as the under surface of the leaves, are clothed with a rusty tomentum. It forms a shrub or small tree, and is common in woods around Nagasaki, in Japan, and it sometimes grows in the clefts of rocks on the sea-coast. This fact would seem to indicate that it is a valuable shrub for the sea-coast in the south and west. At all events it is worth trying, for we have not a very large number of shrubs that will stand the sea-breeze and spray without suffering in appearance. Possibly, it may be as much at home in the vicinity of the sea as is the invaluable Euonymus from the same country. Moreover, it possesses the additional attraction of showy, agreeably-scented flowers. I believe this was introduced by the late Mr. J. G. Veitch, who regarded it as one of the most valuable hardy shrubs of recent introduction. It has been in cultivation in this country now upwards of a dozen years, but it does not appear to have become very widely known yet; probably, on account of its not being so easily propagated as the Euonymuses which have penetrated almost every garden in this country. The form figured in Siebold's "Flora Japonica" is almost identical with R. ovata, except that it has smaller leaves, and a somewhat loose panicle of smaller flowers. But this figure was most likely drawn from wild specimens. Siebold describes it as a shrub from 6 to 10 ft. high, growing chiefly in the southern provinces of Japan in the rocky places on the sea-shore and on the banks of rivers. This can only be regarded as really hardy in the south and west of Britain. W. B. HEMSLEY.

THE AMATEUR'S GARDEN.

By THOMAS BAINES.

Pot Roses.—Roses in pots, flowered in spring in the greenhouse without forcing, will now in most cases have finished blooming, and, where well managed, will have afforded a supply until Roses could be got out-of-doors. If properly cared for, such plants will keep on improving for many years. I have had both Hybrid Perpetuals and Teas in pots for eighteen years, and they were as strong and good at the end of that time as ever they were, although the pots used for them were not more, even up to the last, than 15 in. in diameter. The principal point to which attention must be directed is the encouragement of as much growth as possible through the summer, after they have done flowering; this can only be accomplished by keeping them thoroughly free from aphides and red spider, so as to preserve the foliage in a healthy state, and to never allow them to suffer from want of water. The pots should be plunged in ashes, where the plants will have plenty of sun and air, and growth should be assisted by a liberal use of manure-water. The shoots of plants used for spring flowering should not, after blooming, be cut back in the least; on the contrary, what pruning is required should all be done in winter, before they are put into the greenhouse; whatever they may need in the way of re-potting should also be done then. This kind of treatment is just the opposite of that which Roses should have that are wanted to furnish flowers through the last months of the year. These produce blooms on the ends of the shoots made through the summer, especially such kinds as Tea varieties, which are the best to use for the purpose. In the case of these the pruning and potting should be done after they have flowered, and every encouragement possible should be given to the summer growth.

Azaleas.—Plants of these that are making their growth should have plenty of water at the roots, and they should also be syringed freely. Wherever Azaleas are grown they will require to be narrowly watched for thrips, to the attacks of which they are very liable, and where they are in a house in which Vines are grown it is doubly necessary to keep them clear of thrips, or they are certain to get on the Vines, from which they are difficult to dislodge. As soon as the faintest trace of the insect is discovered, the plants should, if small, be dipped in Tobacco-water, but if too large to be treated in that way, the syringe should be used, taking care to wet the whole surface of every leaf, laying the plants down on their sides, over a vessel large enough to catch the liquid as it runs from them, and let them remain in that position until it has had time to dry on the leaves, which will make the dressing much more effectual. If set up before it has dried, it will run down into the soil, where it will be of no benefit to the roots. Tobacco-water may be obtained from the manufacturers, or it may be made by boiling for half-an-hour any of the preparations sold for purposes of fumigation, such as Tobacco cloth, paper, or cord, or pure Tobacco itself. If cloth, paper, or cord be used, an ounce to the gallon of common washing soda should be added: this will help to bring out the strength of the material much more effectually than if nothing be used; if, in addition, two ounces of Gishurst Compound be put to the mixture this will counteract its oily character, and cause it to adhere more freely to the leaves. It is well to keep a supply of Tobacco-water in readiness, in which to dip or syringe any plant on which insects are discovered. By this means they may be kept in check with a fraction of the labour required when they are allowed to get to a head before means are taken for their destruction.

Camellias.—Plants that have flowered late which have not yet completed their growth should still be freely supplied with water, both at the roots and in the atmosphere, without which they will not make satisfactory progress. This applies to such as are in pots as well as those planted out. There are few plants for which a plentiful supply of moisture is more essential during their season of growth than Camellias; but should any be more than usually vigorous, and show an inclination to push a second growth rather than set flower, it will be advisable to allow the soil, for a week or two, to get drier than usual before giving water. This will induce a disposition to form buds rather than to make more wood. Camellias do not need so much pot-room as the generality of plants, especially if at all in a weakly state, but restriction in this respect must not be carried too far, or a stunted condition will be the result. Where larger pots are required, there is no time in the year when a shift can be so successfully given as immediately after the buds are formed, as at that early stage they are not so liable to drop as if moved later in the season when they have become larger. Camellias are frequently potted in spring after flowering, when growth is about to start or has already started; but any one who has had much to do with re-potting them must have noticed that the roots make very considerable progress before leaf growth has commenced, and that they are so extremely brittle that it is impossible to move them in spring without many of them being destroyed, and that at a time when a demand is about to be made upon them to supply materials for the formation of young shoots, which, in consequence, sometimes remain in a stunted state for years; whereas, if the potting be done as soon as the buds are formed, such checks are avoided. There is nothing that can be done to plants that have got into a stunted, naked state that will so soon and so effectually bring them round as planting them out in a bed of well-prepared soil, and where this is to be done there is no better time for carrying it out than as soon as the flower-buds are just formed, as the partial loosening of the roots from the compact mass into which they have been compressed in the pots they have occupied can then be done with less ill-effects than at other times. The bed ought to be drained sufficiently with refuse bricks broken about the size of pigeons' eggs, laid underneath the soil to a depth of 2 in., and some thin turves put on it to prevent the finer particles of soil getting down and obstructing a free passage of the water through it. Where strong, healthy specimens are to be turned out with a view to their remaining planted out, good fibrous loam is to be preferred, as in this they have not usually such a disposition to make so much growth as when in peat; mixtures of peat and loam I do not like. But for plants that are to be turned out for a time to recruit their strength good peat will be found the best, in all cases using enough sand to prevent the large amount of water which they require reducing the bed to a soddened, unhealthy state. To ensure success in planting out Camellias the following points require attention:—The ball of the plant should in all cases be sunk below the level of the bed, in order to allow for its settling, and the new material for some distance round the ball should at the time of planting be rammed as close and compact as the ball itself is left. When planted out they are less liable to get dry than when in pots or boxes, but when sufficient attention is not paid to planting them properly, I have seen them suffer from the effects of drought.

Flower Garden and Pleasure Ground.—More than usual attention should through the present season be paid to bedding plants, so as to get them to cover the ground, and flower freely without delay, or the long continued ungenial weather will have the effect of precluding the possibility of their making much display before cold weather sets in. Any blanks in the beds should be made up; mulching, pegging down, and watering when required, should also receive regular attention. Keep the Grass mown, so as to maintain a neat, orderly appearance; and all weeds, such as Dandelions and Plantains, should be cut out, or these will increase; the Plantain is much easier to destroy than the Dandelion, but tenacious of life as the latter is, if it be cut out persistently as it appears above ground, complete extirpation will be the result. Pinks, like other plants, are very late this year in making their growth; consequently the time for putting in pipings is later, but if this be not already done it should not longer be delayed. A large number may be struck under a hand-light in sandy soil, keeping them moist, close, and shaded from the sun, until they have become well rooted.

Stoves.

Achimenes and Gloxinias.—Most of these that were started moderately early will soon be in a sufficiently forward state for removal to decorate the conservatory, or to use in rooms in window recesses, a purpose for which they are well adapted, and where they last a long time in good condition, as the partial shade and comparatively still air of a room just suit their requirements while blooming. In removing them from the close, moist heat of the stove, they must gradually be inured to a cooler temperature before placing them in the conservatory or greenhouse, or the sudden transition will cause them to flag, and spoil any flowers already expanded, as well as those on the point of development. Make choice of positions where they can be kept somewhat closer than is desirable for the usual occupants of these structures, as a dry current of air coming in immediate contact with them will soon cut short their beauty. Later supplies of the above will now succeed best if brought gradually on in pits or frames, where they can be treated according to their requirements. Gloxinias have been so much improved of late that it is now the practice to get a packet of seed from which to raise plants, and to keep the best. Where it is desirable to increase any of these or other sterling varieties under name, leaves should be put in at once in order to afford time for good tubers to be formed before the autumn sets in. Make choice of those that are fully mature, and cut them off with an inch or so of the foot-stalk attached, after which insert in sandy soil, and place under handlights, arranged in shady positions in the stove or other warm house or pit, where they can be gently bedewed over to keep them fresh till rooted.

Rondeletia speciosa.—Among cool stove-flowering plants, few are more useful than the old Rondeletia speciosa, a plant that is not nearly so often met with as its merits deserve, for with a little management it may be made to bloom twice during the summer, and will stand for weeks during that season in the conservatory or greenhouse without suffering the least injury. Its beautiful bright trusses of flowers are almost equal to any of the Bouvardias now thought so much of, and to which they bear some resemblance. Young plants obtained now should be grown on in moist heat, and be well syringed to keep down insects, such as thrips and scale, to which they are subject. In potting, use good fibry loam, with a slight sprinkling of sand, to keep the soil open and porous. Any that are now showing bloom should be gradually hardened, preparatory to being removed to the greenhouse, where they are sure to be prized, and show to advantage among the commoner subjects usually there at this season.

Amaryllis.—These, like most other plants, have had their rise and fall in public favour, and, as is frequently the case with bulbs, seldom get that attention paid to them after flowering as to enable them to produce blossoms the following year. This may in part account for them going so much out of cultivation, for being so gorgeously beautiful, with fair treatment they ought to have held their own against all comers. So much is required in the way of flowers at most places, that plants, after blooming, get pushed aside to make way for others, and bulbs more especially come in for this hard usage, much to their detriment, for just at that time, of all others, they require the most care and attention to enable them to recoup their strength, form fresh flowers, and elaborate the requisite amount of sap to carry them through the period of rest. To assist them in this they must be well cared for now, by receiving the necessary renewal of soil, and being placed in position where they can get plenty of light, heat, and moisture; when grown with the general collection of stove plants, they rarely get sufficient of the former, to ripen and mature the bulbs, on account of the shade that has to be employed to suit the other occupants, and the distance they are placed from the glass. During the summer time there is no better or more suitable place for finishing these off than a common pit filled to within 18 in. or so of the glass with fermenting material, such as tan or leaves, that will afford a bottom-heat of from 80° to 90°, in which the pots should be plunged. This will induce them to form plenty of roots, and a corresponding amount of foliage, on which their blooming capacity depends, as the ripening process later on is a very simple matter, brought about by a full exposure to sun and air after growth is complete. In re-potting any that require it, remove as much of the old soil as possible without disturbing the roots too much, and replace it with good fibry loam, to which a little cow manure, that has been laid up for a year or two, may be added. Pots known as 32s and 24s are sufficiently large for the finest of Amaryllis, as they do not require much root-room, and succeed best when somewhat confined, if properly supplied with water, when growth is most active. The slightest shade, just sufficient to keep the leaves from burning, is all they require after being placed fresh in the pit till they get over the effects of the shift and their new position, after which they will stand any amount of sun and be benefited by exposure to its influence, provided they have air in proportion. Close early in the afternoon, and syringe heavily to keep the foliage clean and healthy, till the bulbs begin to ripen.

Hardy and Half-hardy Fernery.

Should the weather set in dry it will now be necessary to commence watering Ferns, or their fronds soon become disfigured by thrips and red spider, that are sure to attack them when there is a deficiency of moisture either in the air or at their roots. To hold these in check and keep the plants in a fresh condition as long as possible, they should be well damped overhead by using a syringe or garden-engine late in the afternoon, that the water may remain on them during the night. Where it can be used without being a disfigurement, a good heavy mulching of littery material, or half-decomposed leaves, will be found of the greatest assistance, if placed a few inches thick, immediately around the stems of the plants, and as far as their roots feed. This will save much labour in watering, by intercepting evaporation, as far more moisture is lost in this way than the plants take out of the soil.

Stove and Greenhouse Ferns.—Cheilanthes, Gymnogrammas, and other farinose Ferns, if syringed at all, should only be very slightly bedewed, so that the mist-like moisture should fall lightly on the upper surface of the fronds; for, when applied in the ordinary way with any degree of force, the powdery deposit is knocked off, and much disfigurement caused. Most Ferns are now sufficiently advanced in growth to have the whole of the shabby, decaying fronds removed, but, in doing so, much care must be taken that the young tender growth does not become bruised or injured, which would spoil the appearance of the plants for the rest of the year. Any that are grown for general decorative purposes should be gradually inured to more air and a drier atmosphere as soon as the fronds have attained their full size, in order that they may harden and become stouter in texture so as to enable them to thrive in rooms or other positions in which they may be desired. Such Ferns as Adiantums and others that root freely must be kept abundantly supplied with water, especially if at all pot-bound, in which case they can scarcely have too much, and may be occasionally assisted with some weak liquid manure. Should green fly attack them—an insect to which they are very liable—while the growth is young and tender, the safest way is to dip the heads of the plants in Tobacco-water, as fumigation, however carefully done, is attended with much risk till the fronds become more hardened. Where an increase of Gleichenias is desired, the present is a good time to layer any of the rhizomes that have grown to a sufficient length from the pots they are in to be pegged down to some peaty soil in others placed near them. The rhizomes of most of the Gleichenias are of such a hard, wiry nature that it is difficult to get them to emit roots unless treated in this way, and to cut them about for purposes of division often entails loss. Most Ferns admit of increase so readily by division, that it only becomes necessary to adopt the slower process of raising plants from spores where large numbers are required, or of such kinds as cannot be manipulated in that way. Lomaria gibba is one of these, but as it comes so freely from spores, and soon gets to a useful size for furnishing, it is an easy matter to keep up a stock by annually sowing a few pots; this may be done at almost any time when ripe seed can be obtained, although, like most other subjects, they germinate best early in the spring. The pots should be prepared by being well drained with crocks to about a third of their depth, and then filled up with good turfy loam, pressed firmly down, with the top made perfectly level and smooth on which to sow the seeds: this should be done by brushing them off the backs of the fronds with a small brush, but in doing so they must be held close to the soil, or the air will carry them away on account of their minute size and extreme lightness. The soil should not come nearer the top of the pot than half-an-inch or so, to admit space for a piece of glass to be laid over without touching it; this must be kept constantly on till the seeds germinate, after which it may be tilted slightly for a time and then be removed altogether. To keep the soil in a regular state of moisture after sowing the seeds, the pots should be placed in shallow pans that must be constantly supplied with water till the plants show themselves, when it may be applied through a rose or syringe. A shady position, close under the back wall of the Fernery, or any warm house, will suit these Ferns, as long as they have sufficient light and the sun does not get at them to dry the surface of the soil. The above treatment, with more or less heat, according to the requirements of the variety, applies equally to all stove and greenhouse Ferns, and any from which seed can be obtained may be raised in that way. For table decoration and such like uses, Lomaria gibba is perhaps the most suitable of all, its symmetrical shape and Palm-like appearance rendering it well adapted for purposes of that kind. Several of the Blechnums, such as B. brasiliense and B. corcovadense, are

likewise valuable for the same purpose, and come freely from seed.—
—J. Sheppard, *Woolverstone Park.*

Orchids.

Shading will now require constant attention for if left down in dull weather, the leaves and pseudo-bulbs become unhealthy, and later in the season will exhibit disease; the blinds should not be let down too soon in the morning nor left down too late in the afternoon, for the plants in all the houses will be benefited by having the early and late sun on them, provided the ventilators be opened sufficiently to keep the temperature right. The ventilation, which requires great care, should be attended to as recommended last week (see p. 574); in order to ensure a free and equal circulation of air in both warm and cool Orchid-houses in summer, I have found it to be a good plan to lift up each of the lower lights of the roof where they rest on the gutter, with a chisel, and to place a piece of crock or wood about an eighth of an inch in thickness under each, leaving them there day and night until bad weather approaches. The little air that gets in through these narrow openings passes over the heads of the plants, but not near enough to injure them. I am convinced that fully one-half of the Orchids that die under cultivation do so from want of sufficient air. The cultivator must guard against excess of fire-heat during summer; there will be days probably on which it will be wanted, and it will frequently be good for the plants in the warmer houses at night, but it should be avoided as much as possible. At this season a temperature of 5° or 10° extra from sun-heat, provided the houses be properly shaded and a sufficiently moist atmosphere be maintained, will not be at all hurtful to the plants. All the varieties of Phalænopsis will now be making new growth, and any of the plants requiring it should have the old Sphagnum carefully removed without injuring the roots, and its place supplied by Sphagnum in a living state. The plants should be suspended from the roof of the warmest house, and be freely supplied with water until October, care being taken not to sponge the very young and tender leaves of the Phalænopsis, or, when they come to maturity, they will probably exhibit scratches. The tender leaves of the growing Phalænopsis are also very impatient of Tobacco fumigation.—James O'Brien.

Roses.

Those intending to exhibit Roses will require to pay every attention at this season so as to protect the buds from the depredations of the various insects. May bugs are very destructive at this season of the year, the evening being the best time to destroy them; aphides should be thoroughly cleared off by means of the garden engine, and by carefully washing the trees the fly can be dispersed. It is not safe to apply any insecticide for the destruction of fly at this season, as the foliage and flowers are too far advanced, and if Tobacco-water or any other deterrent be used and not efficiently washed off with clean water, it will often stain and spoil the appearance of the foliage. Tea Roses will be found to be attacked by mildew, owing to the cold and changeable weather; the best way to prevent such a mishap is to sulphur them carefully and then thoroughly to syringe the trees after three days. The caterpiller and Rose maggot should be picked off every day. The maggot will be found curled up in the foliage and in the centre of buds, and by steadily examining the Roses every day these pests may be well kept under. Take off all lateral buds, leaving nothing but the centre flower, so as to throw the strength into the single bud; by so doing the Rose is much larger and better formed. The buds selected for exhibition should be carefully staked and tied, so as to protect them from stormy weather, taking care not to injure the foliage in tying or supporting the young growth. Water the plants occasionally with a mixture of cow manure, sheep droppings, and soot-water, mixing the whole in a large tub, which will be found to improve the growth as well as the colour and size of the flowers. Such Tea Roses as Maréchal Niel, &c., require a paper shade, where much exposed to the sun's rays, in order to keep the outside petals from being discoloured; by the use of paper shades Roses may be kept back a day or so, a delay which will be of great service to those who have but a limited stock to cut from. Roses when cut should be placed in tubes in water mixed with a small quantity of Condy's Fluid, to prevent them opening too quickly. Roses for exhibition should not be cut in full bloom, but should be about half expanded, the heat of the day very frequently being prejudicial to them.—H. G.

Hardy Fruits.

The general routine in this department now consists in destroying and preventing the spread of insects, and for a successful mode of carrying out this operation see previous recommendations, but it may be added that the utmost perseverance in the use of remedial measures is necessary to the extinction of the pests, as they increase with startling rapidity when once they gain a lodgment, and especially when the weather is cold and ungenial. Remove the superfluous breastwood, pinch and tie or nail in the shoots required to be left for the furnishing of the walls, and finally, thin all kinds of fruits; this latter operation is not a formidable one this season, but still there are a few trees requiring to be thinned, for though the fruit crops are not such as was at one time expected, there are medium crops of all kinds, Apples excepted, and these are in this district a complete failure. The trees should receive the same attention as if they were full of fruit—a very necessary reminder, because of the disposition to neglect them when there appears no prospect of an immediate return. Cordons, bushes, and pyramidal-trained trees of Apples may now be pinched, that is, the new growths that are not required for the furnishing of the trees may be removed, in doing which well thin out all growths that intersect each other, the aim being to have light and air play about all parts of the trees. Cordons should be pinched in rather closely to keep the spurs as "close home" as possible, but judgment must be used in this operation, in order that growth be not too severely repressed at once. Of course, summer pruning or pinching of old orchard trees is quite out of the question; still, if this could be done, there is no doubt as to its being the proper course to pursue. The recent rains have been of incalculable benefit to the Strawberry crop, which will soon be ripening, and will therefore require protection from birds, mice, and rats—trap the two latter, and net over against the depredations of birds. It will soon be desirable to layer runners for next season's forcing, the best of which are always produced from plants that have been forced this season, and which were planted out a few weeks ago. There is also another advantage about this arrangement, viz., that as there is no fruit on them, injury is not caused to the runners by gathering the fruit, &c. Vicomtesse Héricart de Thury and President are the two kinds that have done best with us this year, and these two only will be forced next season. Each individual should find out the kinds which succeed best with him, and then grow those only. Cherries and Currants are now ripening fast, and must be protected with netting; in this district, birds are becoming so troublesome that netting is nearly useless, and the gun is the only effectual remedy, and which, in self-defence, we are compelled to use.
—W. Wildsmith, *Heckfield.*

CLERODENDRON KÆMPFERI FROM SEED.

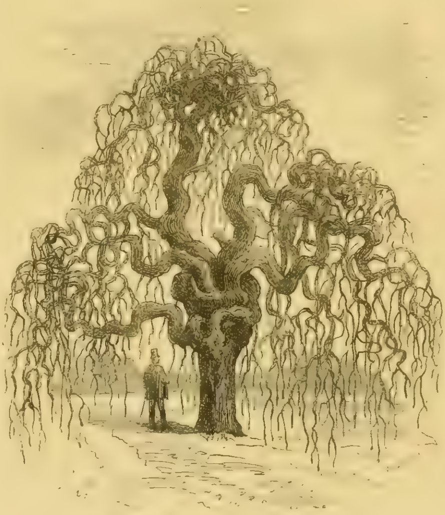
This makes a shapely plant, generally with one stem, which is furnished with broad, handsome leaves, and surmounted by a large and branching pyramidal panicle of scarlet flowers, that render it a most conspicuous object in the plant stove. It does best when raised from seed, which should be sown in summer or autumn, and the plants will flower the following season. A stove temperature is necessary for it from first to last. The seeds should be sown in light, rich soil, and the pot plunged in a bottom-heat of 85° or thereabout. When the seedlings are fairly up, and have one or two rough leaves, they should be potted off into 3-in. or 4-in. pots, in a compost of peat, loam, and sand, and a little thoroughly-rotted manure, and placed in a favourable position as regards light, but it is not necessary to plunge them after this stage. With heat and moisture they will grow away freely, and before winter sets in they should be shifted again into 5-in. or 6-in. pots rather than be allowed to get the least pot-bound. This shift will serve them till spring, and during the winter water must be given carefully—not too copiously—and they should be kept near the glass. About the end of February or beginning of March pot them again, and for the last time, in 10 in. or 12-in. pots, and use a good substantial compost, say, one part loam, one peat or leaf-mould, sand in sufficient quantities to keep the compost open and friable, and about one-fifth of rotten dung. Upon the getting up of a good vigorous stem and good foliage depends the size of the flower-spike and quality of the flowers. I like to see the plants come away with a good broad bottom. No pinching is allowable. When potted give them the highest stove temperature at command for the season, and afford them room and light, and water freely; keep the atmosphere around them moist, and adhere to this treatment till the flower-spike is fully developed. The plants will grow a good bit, and get large before showing flowers, unless they have been stunted at some time; but when the roots begin to fill the pot the spikes of flowers will appear and be thrown well up above the foliage. It is not very subject to insects; but if any bugs be seen among the buds pick them out carefully at an early stage with the point of the brush. To preserve the plants in flower as long as possible they may be removed to a cooler temperature. Chef.

Alexander Peach.—Messrs. Silva and Sons, of California, excellent judges of Peaches, write to the "Gardeners' Monthly" that the Alexander ripens with them a fortnight earlier than Early Beatrice, and is one-third larger.

TREES AND SHRUBS.

THE WEEPING SOPHORA JAPONICA.

According to London the Sophora japonica pendula was first introduced into Europe by Father d'Incarville, who sent seedlings of it to Jussieu in 1747. It was first cultivated in England in 1763, at the Mile End Nursery, by Gordon, who probably received his specimens from Jussieu himself. The Sophora, of which the annexed are representations, is a fine specimen of this tree growing in the grounds belonging to M. Armand-Defresne, horticulturist, at Vitry, near Paris, and described by M. Carrière, in the "Revue Horticole" for May 16. Although there are many better and larger specimens of Sophora to be found, both in England and France, the tree growing in M. Armand-Defresne's ground is notable for its beauty and regularity of form, resembling, when fully covered with leaves, a series of cascades of foliage, gradually increasing in size from the top downwards. This tree is about 25 ft. high, the height of the stem being about 5 ft.; the circumference at the base is nearly 7 ft., and near the graft 5 ft. 6 in. Two facts relating to the flowering of the Sophora are somewhat remarkable, one is, that of late we hear much more frequently of its flowering than during the first seventy or eighty years after its introduction into Europe; the other, that only those portions of the tree which face the south, the east, or the west show any blossom. The tree also seems to begin to flower much sooner than formerly, a young specimen of it in M. Armand-Defresne's garden having shown several blossoms when only four years old. The causes of these phenomena we must leave to theoretical botanists to explain. The annexed woodcuts represent the winter and summer aspects of this tree, of which there are good specimens now in great beauty in the Fulham Nursery.



The Weeping Sophora (winter aspect).

FINE CONIFERS.

By far the finest specimen of the Wellingtonia gigantea that has hitherto come under my notice I met with recently in the beautifully-laid out grounds of Kenfield Hall, near Canterbury, the residence of Mr. R. E. Toker-Thompson; its height, as far as I could guess, must be about 60 ft., and its outside measurement of branches, roughly measured by pacing round it, at least as many feet; and never before have I seen any specimen of this tree in such perfect condition or so beautifully feathered to the ground. It is well worthy being figured as a companion to the Araucaria imbricata at Dropmore. This Wellingtonia has been planted about nineteen years, and was 6 in. high when it came to Kenfield. In the same grounds are several fine specimens of Araucaria imbricata, producing a number of their curious cannon-ball-shaped-cones, which take nearly two years to come to perfection. The handsome long-spined Pinus macrocarpa (so seldom seen as a really fine specimen in this country, and which has not, I believe, yet coned in this country), is now showing its first cone on a fine specimen upwards of 70 ft. in height. This cone began to appear late in the autumn of last year, and being on the extreme top of the tree with only the young growth of this year above it, it is too far off to enable me to give any description of its form or shape. This species is said to produce by far the largest cones of any of the Pine family, some of those that have been imported weighing upwards of 5 lbs. The handsome and quick-growing Pinus insignis grew into a fine specimen in these grounds, but was killed during a not very severe winter two or three years ago, thus proving that this fine variety is not by any means so hardy as was expected. In California, in various parts of which it is found, it forms a fine tree, which often reaches a height of from 80 to 100 ft., and from 2 to 4 ft. in diameter, feathered to the ground with branches. W. E. G.

Spanish Furze (Ulex hispanica).—This is unquestionably one of the most effective, hardy shrubs which we possess for lighting up, so to speak, our shrubbery borders in spring, producing, as it does, at that season for weeks together dense masses of double bright orange blossoms in the greatest profusion. It is compact in growth, does not exceed 1 ft. in height, and is equally well adapted for front lines in borders, or for isolated tufts on Grass. It retains its foliage fresh and green throughout the season, and is in every way preferable to the common and better known double Furze, which soon becomes straggling and unsightly owing to its excessive freedom of growth, and it is consequently unsuited for any but semi-wild and rugged situations. The Spanish Furze, on the contrary, possesses so many good and desirable properties as to render it suitable either for small or large gardens. It is, in short, a very pretty shrub, which is worthy of being better known than it is, and more extensively grown. In St. John's Nursery, Worcester, are some famous examples of it—masses, a yard or more in diameter, having been established there for years.—Geo. Westland.

The Evergreen Laburnum (Piptanthus nepalensis).—This is one of those plants which have been placed first in one genus, and then in another. Don names it Thermopsis laburnifolia; Wallich, Anagyris indica; Hooker, Baptisia nepalensis; and Sweet, Piptanthus nepalensis, a name now generally adopted, and one which is derived from *pipto*, to fall, and *anthos*, a flower—all the segments, stamens, and calyx soon falling off. The leaves are trifoliate and sub-evergreen, and the leaflets elliptic-oblong, acute, broad, and when young rather silky, but when fully matured, smooth, and deep green above, the decaying ones being yellow and green. The naked young wood is dark green and stout; the flowers are large, terminal, rich yellow at the base; the legumes or pods are broad-linear, compressed, six-seeded, and green, turning to brown when ripe in October. It forms an elegant sub-evergreen shrub, 8 ft. or 10 ft. high, which when clothed with beautiful, large golden flowers in May and June, makes a fine display. It is a native of Nepaul, and is sufficiently hardy to withstand the winter in the open air in the neighbourhood of London, but further north it requires a wall.—G. G.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Hemlock Spruce in England.—The reason this Spruce does so indifferently in England, is, according to Mr. Meehan, probably the presence of limestone. The best soil for the Hemlock is that overlying granite. Even in America it does not thrive in limestone soils.

Trees on the Great Mountain Ranges.—On the Himalayas trees grow up to a height of 11,800 ft., and there are often forests just below this line. On the Andes the growth of trees ends at 12,130 ft.; on the Alps it ends on an average at 6400 ft.; but it is stated that specimens of trees are found above 7000 ft. On the Himalayas there is no Grass vegetation above 15,400 ft., but the pasture-grounds in Thibet are known to extend over an elevation of from 15,000 to 16,350 ft.—"Statistical Reporter."

The American Mistletoe.—We have an American Mistletoe, which resembles the English species in leaf and manner of growth, although it is botanically quite a different plant. Its name is Phoradendron flavescens. It is found growing upon various kinds of trees in the Middle and Southern States. It may be propagated by grafting upon the wild Thorn Apple, Ash, Honey Locust, also the common Apple, and several other trees. The operation is performed by making an incision in the bark of the tree, and inserting into it a thin, wedge-shaped scion of the Mistletoe, having upon it a bud or two and at least one leaf. The best time for doing this is early in spring.

Berries for Birds.—I would urge the planting of Evergreens about the home grounds to afford shelter to the birds in winter. In addition to Trees and Shrubs for shelter, there are many kinds which produce fruit very acceptable to birds, although of no especial value to man, and these should not be overlooked in laying out and planting new grounds or improving old ones.—A. S. Fuller.

THE FRUIT GARDEN.

M. GLOEDE ON STRAWBERRY CULTURE.

Contrary to general opinion, M. Ferdinand Gloede maintains that Strawberries may be grown in any kind of soil, provided a certain amount of trouble be bestowed upon it, small enough when we consider the great benefit to be derived from the successful culture of this fruit. M. Gloede has seen Strawberries successfully cultivated in almost pure sand at Fontainebleau; but those who tried the experiment acknowledged that the results did not repay the attention bestowed on them. He also mentions having seen Strawberries grown in the back gardens of houses in large towns, in situations, however, which were well exposed to the sun and air, but in which there was, so to speak, no soil. The owner in this case, an enthusiastic experimenter, commenced by digging holes a foot in diameter and a foot deep, which he filled with a compost previously prepared, and in which he planted his Strawberries; every two years he renewed both compost and plants. In this way he managed for years to supply his table with excellent Strawberries. M. Gloede also mentions that he has seen excellent fruit grown on volcanic soil and common clay without the addition of any manure. He does not, however, recommend Strawberry growing under difficulties, and merely alludes to these facts to show that no soil, however poor in quality it may be, is wholly unsuitable for Strawberry culture. The chief point is to have the determination to succeed, and then all obstacles are easily surmounted. A Strawberry bed ought to be planted in an open and airy position, as far distant as possible from large trees, for strong sunshine, far from hurting the plants, is, on the contrary, favourable to them, provided the directions contained in the following pages be complied with. The ground in which the Strawberries are to be planted should be dug to the depth of at least 18 inches, and even deeper where practicable; where the ground is partly exhausted a good layer of half-rotten manure should be dug in. If the soil be heavy and damp horse manure, or fowl, rabbit, or sheep droppings should be used; if, on the other hand, it be light, cow or pig manure may be employed with advantage. If possible, this work should be done roughly before the winter sets in, in order to allow the frost to penetrate and pulverise the soil. If, on the contrary, the work have to be deferred until the spring or summer, the soil must be allowed to become firm before planting. If the soil be good and fresh, and not exhausted by other crops, manuring may be dispensed with for several years.

The Weeping Sophora (summer aspect).

Time for Planting.

If convenient the grower had better commence to plant out early in July if possible, that is to say, if the young plants be sufficiently large to allow of their being transplanted. This method has two advantages:—the plants have time to get established before winter sets in, and are capable of yielding a full crop the following season; and there is no need to lose a single plant, seeing that the operation can be carried on under the most favourable conditions both of time and weather. If the plants have to come from a distance, planting out ought to be delayed until September, as then they will not only travel with greater safety during the cooler weather, but they will be more vigorous, and will be provided with stronger roots, and will, consequently, take root again much more quickly. When the planting out, however, takes place so late in the season, so good a crop cannot be looked for as if it had taken place in July. September, however, is much the best month for general planting out, an operation which may often be deferred with advantage even till October. If, however, planting out cannot be finished before the end of October it would be better to wait until the spring. If planting out be done with the intention of gathering a small crop the same year, the operation must be begun early, say from the end of February to the end of March, according to the state of the weather. In April the flower-buds begin to appear, and if transplantation takes place at that period the buds must be rigorously pinched off, for the plants will not have struck root with sufficient firmness to be able to bear fruit; besides, the ultimate success of the whole experiment would be compromised.

Method of Planting.

The ground having been prepared, the whole is levelled, and the beds or lines marked out. A hole of sufficient depth to receive the plant is carefully made with an ordinary garden trowel; the plant is inserted, taking care to properly spread out the roots, and the soil is then pressed round its neck or collar, which ought to be just level with the surface of the ground. In planting with a trowel, the roots are often pressed together into a mass in a perpendicular hole. This is a great mistake, and one productive of bad results, inasmuch as the young hair-like roots, which are so necessary to the future health of the plant, cannot develop themselves, and before new roots can grow from the neck of the plant it often perishes. The requisite number of plants having been planted, they are watered, even should the weather be wet, in order to help the roots to fix themselves in the earth. In small gardens or plots of ground it is advisable to plant in beds or borders; but for cultivation on a large scale, where a few square yards of ground is of no consequence, the system of planting in rows should be adopted, for reasons to which I shall presently advert. A bed should measure at least 4 ft. wide, and should contain three rows of plants with equal spaces between them. When in rows the plants should stand quincunx fashion, a couple of feet apart. In borders a distance of 16 in. will be quite sufficient. These distances apply only to the larger sort; for the Quatre Saisons variety the bed may consist of four rows instead of three, the plants being from 12 in. to 14 in. apart every way. If it be desirable to make borders of the Quatre Saisons variety, the Gaillon kind is preferable to all others, inasmuch as it throws out no runners, and, as a matter of course, requires no attention in that respect.

Treatment after Transplanting.

The most important point to which attention should be directed after the plants have become established is the regular nipping off of all runners at least once a week before they have even commenced to take root. The difference in the yield of a plant from which the runners have been regularly pinched off, and one which has been allowed to grow its own way and throw out as many runners as it liked, is incredible. The destruction of runners is a point which can hardly, indeed, be too much insisted upon, for not only is all the sap which goes to feed them absolutely necessary to maintain the mother plant in a state of healthy vigour, but the runners—trailing here, there, and everywhere—prevent proper attention being paid to the bed. When once the plants are in their proper places, all digging must cease, so as to avoid the danger of cutting off the fine fibrous roots which are thrown out from the necks of the plants in all directions to a great distance, and upon the free growth of which the health of the plants mainly depends. For keeping the ground clear of weeds, both rake and hoe should be constantly used. The plantations being made and attended to according to the preceding instructions, the plants will withstand the severest winter without protection. It is better not to remove the dead leaves as they wither, for they are useful in obviating the effects of severe frosts, and should only be removed at the end of February or the beginning of March.

Treatment before Fruiting.

As soon as severe weather is over, the dead leaves may be cleared away, and the soil lightly stirred with a hoe. It is as well to water the ground once a week with liquid manure, or in default of this, to spread over the surface a light layer of compost, consisting of half-rotted manure, wood ashes, or soot. The plants will now begin to grow rapidly, and as the end of March approaches, straw should be laid between the rows. For this operation neither Moss, fresh Grass, nor manure should be employed, the first two having the objectionable property of harbouring insects and creating mould, while the latter, if not entirely spent, would burn up the young leaves and hearts of the fruit. The straw prevents the fruit from becoming soiled, and it has the additional advantage of obviating the necessity for constant watering. Freshly cut straw should be used liberally, the whole of the ground being thickly strewn with it, care of course being taken not to cover up any leaves of the plants. Another material which is in high favour amongst growers is spent tan, which is said to be an effectual preventive of wire-worm. Besides the use of straw and tan, a handy little invention, called a *porte-fraise*, is sometimes used. The *porte-fraise* consists of a ring of galvanised iron wire, measuring about 6 in. across, provided with movable legs 12 in. in length. These are stuck into the ground in the middle of each plant. When the fruit is just beginning to form, the fruit-bearing stems are drawn carefully through the rings and allowed to hang over. Thus cradled, as it were, the fruit is more likely to ripen quickly than if it lay on the ground, and being exposed more fully to the sun, it colours more rapidly; on the other hand, rain does not do the fruit such serious damage as when it lies on straw or tan.

Gathering, Packing, and Transport.

The gathering of Strawberries is frequently done carelessly, and thus their handsome appearance is impaired. First of all, the fruit should never be gathered after nine o'clock in the morning, or at any rate before the dew has entirely disappeared. The stalk should be nipped with the forefinger and thumb, or cut with a pair of fine scissors a short distance below the calyx; the fruit, as it is gathered, should be laid in a flat basket and kept in a cold cellar or pantry until it is required. A Strawberry should never be washed, but if this operation be unavoidable from the strawing not having been properly attended to, it should be performed just before the fruit is set on the table. Strawberries which have a long distance to travel should be plucked with a pretty long stalk, and just before they have come to maturity, in order that they may have a better chance of standing the journey. Strawberries being so delicate are always more or less injured except when carried by hand; shaking inevitably destroys the surface, thus rendering the fruit more liable to rot. For transport flat wooden boxes with tightly-fitting covers should be procured, the size of course being proportionate to the quantity of fruit to be carried, the depth being such as to allow room for only one layer of Strawberries along with their packing. A quantity of cotton wool should be laid on the bottom of the box and covered with fresh and dry Strawberry leaves. The fruit should then be laid in in rows, leaves being interposed between each row, and the whole should be covered over with a layer of leaves and cotton wool; the cover should then be put on and secured in any manner that is most convenient. A number of these boxes may be piled on each other and corded together. Thus packed Strawberries will bear a railway journey without damage. It is hardly necessary to speak of the excellent qualities of this delicious fruit, whether we look on it as a luxury or as a wholesome food. Unlike other fruit, it may be eaten without inconvenience at all hours of the day, and the old dictum that fruit is lead at night will not apply to the Strawberry.

Treatment after Gathering.

Many imagine that when once the crop is gathered Strawberry plants may be left to themselves for the best part of the year, until, in fact, the other portions of the garden have received attention. This is a mistake, for the plants, which are weakened and exhausted by having borne a heavy crop of fruit, need all possible care during the remainder of the fine weather if we wish to keep them for a second year with any chance of success. The first thing to do is to give the ground a good hoeing, and the plants a copious watering with liquid manure. Where the soil has been washed from the necks of the plants earthing up will be required, for it is from the neck or collar that the young rootlets, which are necessary to restore the exhausted plant to its former vigour, will spring. Weeds cannot be too carefully kept down, and after rains where the soil is heavy it must be stirred with the hoe or rake, copious watering being had recourse to in case of drought. It is scarcely necessary to repeat that all runners must be carefully pinched off before they strike root. Treated thus the plants will yield good crops for two or three consecutive years, although the fruit will not be so large or finely flavoured as if the biennial system of culture were adopted.

Biennial Culture in Lines.

M. Gloede strongly recommends this system of culture, especially for market purposes. After having dug and manured the ground lines are traced at a distance of about 5 ft. apart. This applies to the ordinary English-grown sorts, but not to the Quatre Saisons variety, which is best cultivated in beds. A dull or wet day in July should be chosen, and a number of young plants that were pricked out in June should be dug up with an ordinary garden trowel, a small portion of earth being left adhering to their roots. They are then removed to the prepared ground with every necessary precaution, and planted at a distance from each other of about 18 in. They should be well watered as soon as one line is complete, and so on until the whole is finished. Although the sun is very hot at this season of the year, shading will not be much needed. If they droop at all water them well thoroughly and often, and they will soon become healthy and strong. They will go through the winter without danger, and will yield a full crop of handsome and excellent fruit. It may be asked whether the spaces between the rows may be utilised, but most cultivators are agreed that it is better to leave them uncropped. The occupation of the intermediate spaces by other plants interferes with the proper culture of the Strawberries; and the soil which is to be occupied by a new row of plants the following year becomes exhausted and weakened. The crop being gathered, destroy the old plants, and plant fresh ones in lines between the old ones. Dig up the old rows, and manure well for the coming year. By thus alternating the rows year after year, excellent results will be obtained.

Culture on Elevated Rows.

It has long been known that Strawberries cultivated on raised rows ripen earlier, and yield fruit of a finer quality than when they are grown on flat ground, more especially in cold, heavy soil. In this case M. Gloede recommends the following system, which, with the exception of the formation of the raised rows, is similar to that just described:—Trenches about a foot wide, and the same in depth, are dug at a distance of 5 ft. from each other, the bottom being filled to the depth of about 6 in. with half-spent manure, or half-rotten leaves well mixed together. The soil dug out is then replaced in such a way as to form a raised row or mound, after which the lines for the rows of plants are marked in the usual manner. When the soil has become sufficiently consolidated the planting is proceeded with, care being taken to follow the directions already given. When the planting is over, each plant is surrounded by four bricks almost entirely sunk in the soil. When spring arrives the mounds are covered with straw or tan, as already described in order to save the trouble of constant watering. Planted thus the roots of the young Strawberry plants keep perfectly healthy during the winter, and when hot weather arrives the brick enclosure and the strawing obviate the necessity of watering. This kind of Strawberry bed, when once made, has a neat appearance, and will yield extraordinary results.

Nursery Beds.

In order to have plenty of young healthy plants ready for forming new plantations, a portion of ground in a favourable situation should be set apart for the purpose. One or more beds may be devoted to this work, and the young plants should be pricked out in rows at suitable distances apart. Hoeing and raking should be constantly kept up, and all flowers should be diligently pinched off. Runners will also appear, and as soon as they begin to take root, they should be treated in the following manner:—Take a number of thumb pots, or "sixties," fill them with a compost consisting of equal parts of good mould and rotten manure, and bury them round each plant, one for each runner. Plunge the root of each runner into its proper pot, taking care to keep it in its place by means of a twig or peg; water well and daily, if necessary. At the end of a fortnight or three weeks, the pots will be full of roots, when the runners may be pinched off and the young plants left to shift for themselves. As soon as they have fully recovered themselves, they may be either transplanted to the place which they are ultimately to occupy, or, in case the necessary preparations have not been made, they may be turned out of their pots and plunged in mould, from whence they may be removed at any time. If intended for pot culture, they may be re-potted at once. If large numbers of young plants are required either for forcing or for planting in the open air, the rooted runners may be nipped off and planted at once, care being taken to perform the operation in rainy weather. They should be pricked out about 4 in. apart. These young plants will require a great deal of watching and frequent waterings during hot dry weather. The secondary runners thrown out by the potted plants should be pinched off as soon as they appear, as they tend to weaken the young plant.

Manuring.

It is essential that all the manure which is to be employed in a Strawberry plantation should be in a half-spent condition before being dug in. Pig and cow manure are specially fitted for hot and dry soils, which, indeed, will be benefited by almost any kind of manure; while horse, sheep, rabbit, and fowl droppings are better fitted for cold and heavy soils. The refuse from earth closets mixed with powdered wood charcoal also makes excellent manure; wood, turf, bone, coal ashes, and soot, are also of service. The surface of the ground should be sprinkled with one or other of them during the spring and autumn, advantage being taken of a rainy day for the purpose; guano mixed with water is also good, but if used in a state of powder it will burn up the young roots. Good leaf-mould, heath-mould, and garden-waste left in a heap and turned over now and then, are not to be despised.

Insects.

First comes the white grub of the cockchafer, which, if not checked in time, commits fearful havoc amongst Strawberry plants, especially in the case of light and dry soils. Unfortunately, it is only when it is too late that the presence of this pest is perceived. A large number of remedies have been proposed for its destruction, but nearly all of them are useless. At one time it was proposed to plant Lettuces between the Strawberries, but the grubs seemed to show the same predilection for the roots of the Strawberry plants as before. Moles have also been encouraged, but they have only added to the cultivator's troubles, for their presence does not seem to diminish the numbers of the white worm. Ten or twelve years since M. Gloede tried flour of sulphur with a certain amount of success. One square of his garden in particular was fearfully ravaged during the summer of 1863; he therefore determined to have the plot thoroughly dug up before the second year, in order to eradicate these troublesome visitors by hand, but unfortunately, on account of the drought, the work was put off till November, when the grubs had gone down to their winter quarters out of reach of spades and forks. The ground having been dug and manured, it was determined to replant it in the following February; before doing so, however he spread over one-half of the plot a thin layer of flour of sulphur, which was afterwards dug in with a fork; the other half was left in its original condition, and at the end of the month the whole square was planted with Strawberries. In April, when the grubs ascend to the surface, M. Gloede was agreeably surprised to find that the sulphured half remained untouched, while the rest was completely laid waste at the end of a fortnight. Whether the sulphur had really destroyed them, or whether they had only been driven into the unsulphured half of the ground remains to be proved. In this case, as in that of tan, repeated trials have proved that the sulphur will not always eradicate the pest; it is true that in certain localities the remedy has met with every possible success, whilst in others it has given a negative result, but as the operation is simple and inexpensive, it may be tried wherever the white worm makes its appearance. It is said that the sulphurous ashes from blast furnaces and ironworks are very effectual in destroying the grub of the cockchafer. Strawberry plants are also attacked by a small green caterpillar, especially early in the spring; it devours the young leaves with extreme rapidity, and ought to be looked for as soon as the gnawed leaves show its presence. A large grey caterpillar, with a very hard skin, and which is very difficult to discover on account of its colour, attacks the plants just below the surface of the soil; it is the same that so often attacks the collar of young lettuces and cabbages. Snails also do a great deal of damage, just as the fruit is attaining maturity, but is easy to get rid of them by placing here and there between the plants a number of small heaps of bran, a description of food of which they are exceedingly fond. Early in the morning, or late in the evening, they may be found congregated about the bran heaps, and may easily be picked off and destroyed. Ants attack the ripe fruit, and do much mischief; by placing in their way a number of saucers filled with honey, they may be collected together, and destroyed with hot water.

The Hautbois.

This variety, the English Hautbois, which was so justly esteemed by our forefathers, was almost exclusively cultivated before the introduction of varieties of American origin and growth. The cultivation of the Hautbois has been wrongly abandoned by cultivators, because, as they alleged, the species had degenerated and become barren, or else that the fruit did not please the eye, or that it possesses a peculiarly strong odour. The Hautbois is, however, to other Strawberries what the Muscatel is to other Grapes, and is certainly worth re-introducing into our Strawberry gardens. It is well known that among Hautbois there are plants of both sexes, some yielding flowers which are exclusively male, and others flowers which are just as exclusively female. There are also hermaphrodite flowers, of which there is no need to speak here. It often happens that in a large number of plants there are more males than females; the first year, however, the female plants yield an abundant crop. After the fruit has been gathered, the male plants, which are all the more vigorous from not having borne fruit, throw out an immense quantity of runners, which speedily cover the ground. The second year's crop is extremely small, the sterile male plants having completely invaded the whole plantation. The third year matters become worse, and the plants are uprooted and their cultivation abandoned. The male plants should have all been uprooted the first year immediately after flowering, and only the hermaphrodite or female plants allowed to remain. Some growers imagine, but wrongly, that in order to have an abundance of good fruit on the female plants, it is necessary to plant male plants along with them, in order to fructify them, but the Hautbois, it must be remembered, will bear fruit—seedless, it is true—when grown alone. In a neglected plantation the fruit will, however, be pale and small, a circumstance which has tended to depreciate this variety. The Hautbois, more than any other sort, require a large amount of moisture. If the soil, therefore, be naturally dry, the plants will require copious watering, especially after flowering; they also dislike a warm situation, and thrive best when the plantation has a northern aspect; they likewise require less manure than the other varieties, being liable, if over-manured, to push forth leaves instead of fruit.

Propagation.

The Strawberry may be propagated in three different ways:—(1) By means of runners; (2) by division; (3) by seed. The propagation by runners has already been described. It is only necessary to add that in small gardens, where there is no space for the formation of a runner plantation, the number of young Strawberry plants necessary for renewing the old beds may be grown in the following manner:—As soon as the first "knots" on the runner are well developed, and before they have formed the tuft from which the rootlets spring, they should be cut off, trimmed, and planted in thumb-pots filled with good mould; they should then be removed to a northern aspect and covered with bell-glasses, and if they be shaded during the hottest part of the day, there will be rarely any occasion for watering them. The knots will soon throw out roots, and as soon as they begin to show at the sides of the pots the young plants should be gradually inured to the open air, and watered if necessary. At the end of a fortnight or three weeks they will be ready for planting in the open ground. Propagation by dividing the roots of the old plants is only adopted with one of the Quatre Saisons varieties, which throws out no runners; but in the case of rare varieties, which it is desirable to propagate as speedily and largely as possible, the practice may be had recourse to after the fruit has been gathered. The woody portion of the root is shortened, and the old leaves plucked off; the divided plants may then be planted in nursery beds in the open air. Rootlets will speedily develop themselves around the collar, when transplanting may take place. It should be observed that the larger varieties do not yield good results when propagated by root division, the plants being rarely so strong and fine as those grown from runners. As regards propagation by seed it is only the Quatre Saisons variety which exactly reproduces itself in that way, all the other large-fruited sorts, particularly those of American origin, varying greatly from the parent kinds, and rarely yielding the particular type sown. Recourse is therefore had to this method of propagation in order to procure new varieties. Strawberry seed rarely preserves its germinating powers beyond a year, and some growers, in order to make assurance doubly sure, sow as soon as the fruit is gathered, that is to say, in June or July. It is true that by this plan the seed germinates quickly, but the time before winter sets in is too short to allow the young plants to develop themselves sufficiently to resist the cold; it is necessary, therefore, to prick them in under glass and pay a large amount of attention to them without advancing their fruiting period by a single day. A much better plan is to clear the seeds from the pulp immediately after gathering and preserve in paper bags in a dry place until the end of February, before which period sowing should not take place.

Choice of Plants for Seed.

It has often happened that good varieties have been obtained by sowing seed taken haphazard from choice sorts, but races and types cannot be brought to perfection by chance. For the mother plant a sturdy fertile variety should be selected, the fruit of which leaves something to be desired in the way of quality, and the pollen should be taken from kinds remarkable for fine flavour, if even they be not particularly large, and the habit of the plant not over-vigorous. At the end of February a number of earthenware pans should be filled with finely-powdered, but not sifted, peat-mould, mixed with a little powdered charcoal, some pieces of broken pots being placed in the bottom of the pans for drainage. The mould should be made tolerably firm in the pans, and watered, and the seed dusted over the surface as evenly as possible. It should then be pressed down lightly with the hand, and covered with a dusting of soot and powdered charcoal, a thin layer of finely-chopped dry Moss being spread over all, in order to favour germination, and prevent the seed from being disturbed by subsequent waterings. The pans should then be covered over with a piece of glass, and placed in a frame, the temperature of which is from 52° to 60°. The surface of the soil in the pans should never be allowed to become dry, and if the sun shine fiercely on the frame they should be shaded. In the course of a fortnight or three weeks, a full crop of young plants ought to have made its appearance. The Moss should now be carefully removed, and the young plants gradually inured to the open air. The greatest watchfulness must now be exercised in keeping out snails, for these unwelcome visitors may destroy the hopes of a whole month in a single night. In order to protect the young Strawberries more effectually, a dressing of fine soot may be added after each watering. As soon as the young plants develop their first pair of leaves, they should have more air, and when they begin to crowd each other inconveniently, they should be pricked off into thumb pots, after having pruned the roots somewhat so as to increase the quantity of fibres. For this purpose a good compost should be prepared, half ordinary mould and half old rotten manure, a small quantity of river sand and powdered charcoal being added. The thumb pots should be placed in a cold frame, which should be kept close for several days until the young plants have taken root. Air should then be gradually given them, and as soon as the fine weather has fairly set in, which generally happens about the beginning of May, they may be taken from the frames and placed in the open air. By this time they ought to be well grown, and may be transplanted to where they are intended to grow. They should receive the same care as plants grown from runners, the operation of destroying all runners being frequently and ruthlessly performed. By the beginning of winter they will have become strong and well established, and next year they ought to flower abundantly. They should now be frequently inspected, and those plants which promise to yield fruit of hopeful quality should be marked. A Strawberry plant, however, should never be judged by the fruit yielded by it during the first year, for it often happens that unsuspected qualities are developed during its second season of fructification, when the plants have attained their full development. Sowings of the Quatre Saisons variety should be made at the end of March in well-manured beds in the open air, and as soon as the young plants have formed leaves they should be transplanted into a nursery bed, and kept well watered and weeded. Six weeks or so afterwards they may be planted out, all plants being destroyed that do not flower the first year. [The opinions and practices of M. Gloede, who is one of the most famous cultivators of Strawberries on the Continent, cannot fail to be of interest to English growers. The above is translated for The Garden from his excellent Essay on the Strawberry, published in French.]

Hardness and Rust in Strawberries.—This may, and often does, arise from drought. The plants may have been dried too much during their resting period, and their constitution impaired, or if after forcing begins, watering at any time be delayed till the leaves flag, the soft young rootlets that cluster round the sides of the pots are so far injured for the time being as to be unable to perform their proper functions, the plant receives a severe check, and deformed and inferior fruit is the result. I am of opinion that if Strawberries in pots are only once allowed to suffer from want of water, although water in abundance may afterwards be given, the check thus sustained will have a very deteriorating effect upon the crop of fruit.—E. Hobday.

MELONS SPLITTING.

Most Melon growers have at times been annoyed by seeing their Melons, just as they were about getting ripe, cracking or splitting, and thereby not only completely spoiling their appearance, but, as often as otherwise, ruining them altogether. This splitting is said to be caused by too much moisture at the root, it being supposed that the rush of sap is too great for the fruit to withstand, and that it consequently bursts. This, however, I doubt. I have had crops that finished off well, and I have had others of the same variety that split badly, though both were grown under the same general treatment, and were ripened at the same period of the year. This season I have a long pit ripening off an excellent crop, without a single split in the fruit so far; and I have had neither a favourable season nor have I withheld water at the roots up till now, and the plants are green and growing, and look well for bearing another crop. These plants have been grown leisurely, with a moderate top and bottom heat, have never been damped more than once a day, and that slightly, and only on the afternoons of bright days; but they have always had plenty of air and water at the roots. Syringings have been given now and then, but a dry air overhead throughout has been aimed at. I should state that the plants are growing on a soil bed, and not trained to a trellis, and are, therefore, rather favourably circumstanced for splitting than otherwise. I never saw it occur badly, however, under such treatment. In a pit where splitting has been most troublesome with me I have not always complete control over the bottom-heat nor the moisture; and I have thought more than once that splitting has occurred when the ripening fruit was suddenly subjected to a higher temperature than ordinary, and perhaps a rather too close and moist atmosphere above. In the first case stated above the bottom-heat has been steady throughout, and rather low if anything. It is certain, as I can testify, that the fruit will crack and split nearly through in four-and-twenty hours; and this does not occur with one fruit only, but with all the same division that are that way inclined, which shows that it is the result of a general cause, and that this, it would appear, occurs suddenly, such as too much heat at the roots, and too much moisture overhead, when the former ought to be steady and the latter reduced to a minimum. Splitting from these causes may be produced under different circumstances—from the sudden application of heat supplied by hot-water pipes, or by a week of warm sunny weather after a period of cold, raising the heat of the bed too much. As regards Grapes, Peaches, Pines, Figs, Melons, or other fruits, my experience has impressed me with the fact that as the ripening period approaches a moderate and steady temperature is best and safest, whether size, weight, or flavour are considerations. All these qualities are sacrificed more or less by hurrying, and sudden jumps from a leisurely to an accelerated pace in the temperature—a course never advisable. With the Melon the pace cannot be too steady from the beginning, and should be adapted to the season of the year and the amount of daylight. The first and all-important consideration is to secure good foliage. Without this nothing can be done. Large leaves are a good sign if they have colour and substance; but these conditions cannot be secured unless the plants get time to grow, and have all the light and air possible, and then a crop of fruit is a certainty. I like to see a Melon leaf that cracks and breaks when crushed in the hand; a flabby, ill-constitutioned leaf only bends or folds up, and it is always upon these that red spider and thrips work destruction. A leaf firm in texture they can make nothing of, nor is splitting associated with such foliage, for it is not found under a high and irregular temperature, or a superabundance of moisture in the air. In Melon culture the syringe would, I cannot help thinking, be better laid aside. What possible advantage can it be to a plant which delights in dry sunny weather to be bathed in vapour twelve hours or more out of the twenty-four?—particularly seeing that it can be supplied with as much moisture as it wants, and more, through the roots. Circumstances arise in the culture of plants under glass which render it necessary to use moisture overhead in the form of dew; but a vapoury atmosphere I have always regarded as inimical to the welfare of most indoor fruits. I have known cultivators who, in order to sustain a constantly moist atmosphere in their Vineries and Melon-house, &c., had a perforated lead pipe taken along down the front pipes, so that the water dropped constantly upon them when hot, and so kept up a continual steam. For the same purpose, another laid his pipes in Sphagnum, which was kept saturated like a sponge. At all times the air in the houses was laden with moisture, unless the ventilation was so abundant as to let it escape. Good, though not well coloured Grapes were produced under this treatment, but not for long, for the Vines gave way. It is not casual crops, but the permanent health of the plants which affords the best proof of good culture. Chef.

Figs and Fig Culture under Glass.—Some Figs which I have under glass always ripen prematurely and imperfectly. What are the causes of this and of the rusty spots on the small Fig which I send? I have a good many Figs plunged in a border under glass, and though some always drop off very early, almost before they begin to swell, and others just before ripening, as shown by the larger specimen, this is the first time in which they have fallen as shown by the smaller sample. I believe that the roots are kept thoroughly wet—the subsoil is naturally dry; on the whole my Fig growing without heat is considered very successful. I have never quite succeeded in getting two crops in a forced house. [If Figs be planted out in the borders, with a great deal of room for their roots, and the soil rich, they produce very gross and succulent wood, and the fruit seldom ripens well. Figs under glass have always succeeded best with me in shallow circumscribed borders, top-dressing the surface with rotten manure, giving plenty of water at the roots during the growing season, and keeping them rather dry when at rest in the winter time. Figs grown in pots and tubs under glass are subject to the same routine, and are better not plunged in the soil, as they may root through the pots, and cause too great luxuriance, inducing the fruit to drop off before it begins to swell, or before the ripening period commences. As regards the small Fig sent with rusty spots, I believe that they are caused by a fungus of some kind, for on opening it, a mycelium may be seen spreading in the flesh, and rottenness setting in. Figs, when forced under glass with proper management, ought to bear two crops in a season. The first is generally not the best, for, under the best culture, many of the fruit drop off, owing, no doubt, to the sunless time of the year at which it appears if the trees be forced early. The second crop is always the most abundant if proper attention be paid to pinching the shoots in using surface-dressings of rich compost, and giving plenty of weak manure-water at intervals to the roots. The foliage should also be syringed once or twice a day, to keep red spider in check.—William Tillery, *Welbeck*].

The Golden Hamburgh Grape in Pots.—Amongst Vines in Pots this has produced with me the heaviest crop, even excelling in that respect the common Black Hamburgh. Its berries are very large, and assume a beautiful rich golden colour as soon as they ripen—an important matter in the case of pot Vines. I see no reason why, if it had a fair trial for pot-work, it should not become extremely popular, as, like all Hamburghs on well-ripened canes, it shows fruit at nearly every eye, sets freely, and under the usual conditions swells up to a considerable heavier weight of fruit per rod than many of the varieties grown for supplying our earliest Grapes.—James Groom, *Henham*.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Rust on Grapes.—I do not remember noticing that any one has attributed this to mere excess of heat: I do not mean steam or vapour from hot water pipes or flues, but an excess of temperature from sun or fire heat, or the two combined. I noticed a case that followed sharp on the heels of an accidental rise of temperature to about 95°. The Vinery had been shut up about two; the sun came out afterwards and no air was given; rust appeared two days afterwards. The Grapes were in about the middle of their first swelling.—D. T. F.

Double-sided Pots for Strawberries.—Pots are made, I believe, with double sides, to hold water, and these would possibly suit your correspondent (see p. 584). If, however, he cannot procure them, let him place some cement at the bottom of a common flower-pot, of suitable size, keeping the hole clear, and whilst in a plastic state let him press another pot of a smaller size upon it leaving about ¾ in. space for water, or as much more as he may think fit: some makeshift of this kind may perhaps answer his purpose.—Thomas Gell, *Leek*.

The "Fruit Mission."—Last December a "Fruit Mission" was organize by a number of ladies in this city (New York) who understood the needs of the sick in our public hospitals. The object is to supply fruit and other delicacies to the sick, under the direction of the hospital physicians. There are now between 3000 and 4000 patients in our public hospitals whose comfort would be increased and whose recovery would be facilitated by the use of fruit and delicacies not supplied by the hospital rations.

FLOWER SHOWS AND THEIR INFLUENCES.

It is the rule rather than the exception for flower shows to be got up as purely commercial speculations, and that by parties not interested in the least in horticulture. Prizes are offered for such productions as are likely to fill the exhibition tents most readily, and the very last thing thought of is the ultimate effect which such exhibition may have on the public taste, whereas if the funds were expended in rendering popular real improvements in horticulture some good might be the result. As at present constituted, however, flower shows are a dead letter as regards progress, for not only will the same plants and prize lists do for different societies, but they do equally well for the same society year after year. Is it to be wondered at, therefore, that exhibitions got up under such circumstances, lose interest? I firmly believe that, although the number of flower shows held throughout the country would lead one to suppose that exhibiting was popular, showing never was at a lower ebb than at present. Cultivators, as a rule, give full credit to their brethren who produce the finest subjects at exhibitions, of whatever class they may consist; but no one has the opportunity of knowing better than cultivators themselves that it is in the gardens under their charge that evidences of their ability must be found. In my way of thinking, growing for exhibition is distinct from gardening. There is in itself no harm in exhibiting; the evil is that such institutions as horticultural societies, founded with the best intentions, and, in the hope of fostering horticulture, liberally subscribed to, should be made the very means of perpetuating the worst abuses of our gardens. In this neighbourhood at least one-third of the funds of each society is spent in prizes for cut Roses, both grown and staged in the most stiff, formal, and unnatural manner possible. No one can say that Rose-growing, properly so called, is stimulated by the outlay. The same may be said of other exhibition plants, which, if not trained in the orthodox fashion, stand little chance of receiving a prize. But cultivators do not grow what may be termed their decorative plants in this fashion; on the contrary, they dispense with staking and training as much as possible, and that to the advantage of both plants and growers. One consolation is that if cultivators of the present day lack interest in exhibitions as at present constituted, they are not behind their forefathers in all that really concerns the progress of horticulture.

Henham. J. Groom.

Town Gardens.—Thrift on a London window-sill.—I brought a very small tuft of wild Thrift from a mountain in the Snowdon region in North Wales, about four years ago, and planted it on my return to London in a Mignonette box at a bed-room window, in a north aspect, where it gets neither its bright mountain light nor its pure air, nor a single gleam of sunshine, at any time of the day, and yet it has survived four London winters with their smoke and smuts without injury—the Grass-like leaves shining healthy in their bright dark green, and each year throwing up flowers in profusion. It has become a fine large tuft, and has twenty-three flowers in full beauty at the present moment. I know of no other plant that would defy London smoke, and a dark north aspect, with anything like the same degree of hardihood.—H. N. H.

A Wall covered with Heliotrope.—I have frequently seen Heliotropes planted out in conservatories and other glass structures, but never so fine or so luxuriant as here. In a lean-to Vinery, 22 ft. long, the back wall, which is 12 ft. high, is a solid mass of it in perfect health. When I came here in March last, it was a sheet of bloom; it has continued so ever since, and I am told that it blooms continually nearly all the year round, producing an immense quantity of its fragrant blossoms, which are highly prized for mixing with brighter-coloured flowers in bouquets, or for table decoration. The more one cuts it, the more flowers it seems to produce, breaking out afresh below every incision. All the attention that it requires is an occasional soaking with liquid manure, syringing daily to keep down insects, and tying the young growths in as required to keep the wall well covered. It was planted by my predecessor, as near as I can make out about twenty years ago, and the amount of bloom which it has produced during that period has been marvellous. It is also very convenient early in spring to be able to gather cuttings by the thousand from which to raise plants for the flower garden, thus making autumn propagation entirely unnecessary.—H. Harris, *Denne Gardens, Horsham.*

M. Marés has recently calculated the amount of loss sustained by the Vine-growing industry in the south of France since the invasion by the Phylloxera. He states that 250,000 hectares of Vines have already been destroyed, giving place to other kinds of cultivation. This transformation has occasioned a harvest loss of more than 500,000,000f. There are still in France 2,300,000 hectares that have not been affected.

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY.

June 21.

This, though an attractive exhibition, was not, on the whole, equal to the first summer show held here this season. Orchids were remarkably well represented, but stove and greenhouse plants were only of average merit, and among new plants there was nothing of any note which had not been exhibited before. Ferns and fine-foliaged plants were fairly well shown. Fruit, with the exception of Grapes and Queen Pines, was but sparingly represented. Mr. Douglas, however, had some excellent Strawberries, and Mr. Miles splendid Cherries, Figs, and Tomatoes.

Certificates.—These were awarded to the following new plants and florists' flowers:—

Rhopala pubescens (B. S. Williams).—A distinct and effective stove shrub, having pinnate foliage, which, when young, is covered with silvery hairs.

Rhododendron Princess Frederica (Veitch).—A greenhouse hybrid, having soft yellow flowers, relieved by crimson-coloured anthers. It is distinct in colour, and of free habit.

R. Prince George (Veitch).—Similar in habit to the last, but of a bright rosy colour.

R. Prince Leopold (Veitch).—An orange-tinted variety, having a reddish throat. Like the two last-named kinds it bears its flowers in large trusses, and is well suited for pot culture.

Masdevallia Davisi (Veitch).—A clear, yellow-flowered Orchid, and one of the most distinct in the group to which it belongs, the flowers being an inch in diameter, and very freely produced.

Ixora regina (W. Bull).—A robust variety, bearing large trusses or orange flowers, and furnished with glossy green foliage. For general decorative purposes, or for exhibition, it well deserves culture.

Hibiscus Colleri (W. Bull).—A distinct flowering plant, having glossy green foliage, and bearing axillary double flowers, of a soft salmon colour, the bases of the petals being streaked with crimson. The individual flowers are rather fugitive, but as they open in quick succession, the plant remains attractive for several weeks. It is a native of the South Sea Islands.

Smilax Shuttleworthi (W. Bull).—A strong-habited stove climber, having dark, glossy, green foliage, marbled with dull, silvery-grey. It will be useful either as a pot plant, or for covering pillars or back walls in warm plant houses, where its leaf beauty can be seen to advantage.

Maranta Massengiana (W. Bull).—This plant is very distinct, having horizontal, roundish, oblong leaves, of a deep, velvety, green colour, traversed by grey lines. It is one of the most effective of all new Marantas, and deserves careful culture as a stove decorative plant.

Aralia splendidissima (W. Bull).—A large-habited, pinnate-leaved plant, which has previously been certificated and described in our columns.

A. spectabilis (W. Bull).—Another variety of more elegant habit, and a welcome addition to a well-known and graceful group of stove plants.

Artocarpus Cannoni (W. Bull).—A dark-leaved stove plant, previously described.

Croton Mortei (W. Bull).—A strong-growing variety, having broadly oblong leaves, profusely veined and mottled with gold.

Dracæna insignis (W. Bull).—A dwarf and compact plant, well suited for table decoration. Its leaves, which are lance-shaped, are dark purple margined with crimson, and the whole plant is scarcely 15 in. in height.

Dieffenbachia Shuttleworthi (W. Bull).—An oblong-leaved plant of a clear glaucous green colour, the mid-rib being marbled with silvery-grey. It has been previously certificated.

Dactylis glomerata latifolia aurea (E. G. Henderson).—A broad-leaved variety of the common "Cocksfoot" Grass, the recurved leaves being profusely striped with creamy yellow. It promises to be a first-class plant for edgings, or for other decorative purposes, when grown in small pots.

Pelargonium, Wallace (Rev. J. Matthews).—A crimson scarlet show variety, irregularly veined, the upper petals being of a dark velvety-purple tint. It is a distinct and useful addition to what are termed show kinds.

Pelargonium, H. S. Ryder (Rev. J. Matthews).—A rosy pink show variety, the upper petals of which are spotted with black. The flowers are large and smooth, and have a conspicuous white eye.

Pelargonium, Bridesmaid (Foster).—A rosy-purple show flower of good form and substance, the upper petals having a dark maroon spots.

Pelargonium, Purity (Foster).—A soft salmon-red show variety, having dark upper petals. The plant is of good habit.

Pelargonium, Charming (Burley).—A cerise scarlet Zonal of good habit, the flower being composed of well-rounded smooth petals of a distinct tint.

Pelargonium, Mrs. J. C. Quennell (Burley).—A variegated Zonal, of compact habit, having bright silvery-edged foliage and pink flowers, the latter very freely produced; as a pot plant or for bedding purposes it is a decided acquisition.

Fuchsia Laing's Hybrid (J. Laing).—A very distinct hybrid Fuchsia, raised from F. fulgens and crossed with one of the more modern florists' varieties. It possesses a vigorous branching habit, and bears bright reddish, long-tubed flowers, the corollas of which are of a brighter red or rather carmine. As a decorative plant it deserves general culture.

Lobelia cœrulea albo-marmorata fl.-pl. (W. Bull).—This is a double blue variety marbled with white, and one which may not inaptly be described as a double-flowered L. Paxtoni. It is distinct and pretty, either for out-door beds or for pot culture.

Pelargonium, Sappho (Turner).—This is of such a robust and free-blooming habit that it is likely to be largely grown for market purposes. Its flowers are of good form, the colour being brilliant rosy-carmine with a black spot on the upper petals, these colours appearing all the more distinct on account of their being contrasted with a pure white eye.

Orchids.—These were shown in better condition than we have hitherto seen them this season, and being arranged on sloping turf banks were seen to the best advantage. Among the more remarkable specimens we noted well-grown plants of Saccolabium guttatum, the pale-rosy Odontoglossum vexillarium, Aërides odoratum, and Masdevallia Harryana, from Mr. Heims; Mr. Salter had well-flowered plants of the orange-scarlet Epidendrum vitellinum majus; also Odontoglossum Alexandræ, O. Pescatorei, and O. citrosmum roseum, together with Lælia purpurata, and an exceptionally fine Oncidium macranthum, bearing over fifty great yellow and brown flowers. Mr. Denny, who furnished one of the best groups of twelve plants which we have seen this year, had Cattleya Warneri in splendid condition, one plant bearing eight carmine purple-lipped flowers, and also a fine Cattleya Mossiæ; in this group was also a remarkable variety of Oncidium Lanceanum, bearing a great branched spike of brown, mottled flowers, having a great purple lip; Anguloa Clowesi, Cattleya Leopoldi, and Dendrobium Bensoniæ, were also represented by well-grown specimens. Mr. Ward contributed an effective collection, in which there were well-bloomed examples of Odontoglossum Blunti, the white Dendrobium formosum, a good potful of the Bearded Lady's Slipper, and well-grown plants of Odontoglossum vexillarium. Mr. J. Douglas had a fine variety of Cattleya gigas, with delicate rosy-petalled purple-lipped flowers, and also a fine variety of Masdevallia Harryana. In the nurserymen's class Mr. B. S. Williams had a large example of Cattleya Mossiæ, bearing twenty-one flowers; also the Bearded Cypripedium, the purple-spiked Orchis foliosa, from Madeira, with twenty-five flower-heads, and good plants of Aërides affine and Odontoglossum citrosmum roseum. The same exhibitor likewise furnished Cypripedium superbiens, bearing ten fine flowers, a good potful of the orange-scarlet Epidendrum vitellinum, Brassia verrucosa, Anguloas and Lælias. Messrs. Jackson, of Kingston, had Cattleya Mossiæ with deep rosy purple-lipped flowers and other well-grown species.

Stove and Greenhouse Plants.—Of these the best twelve specimens came from Mr. J. Ward, gardener to F. Wilkins, Esq., of Leyton, among whose plants were wonderfully fine examples of Ixora amboynensis, bearing considerably over 100 trusses of soft orange blossoms; Kalosanthes Phœnix, 4 ft. in diameter, and a mass of fragrant scarlet flowers; Clerodendron Balfourianum, 5 ft. high, and 3 ft. in diameter, and a mass of fresh green leaves and rich scarlet and white flowers. Two of the most effective plants in this group, however, were the purplish-blue Statice profusa, 5 ft. in diameter, and Bougainvillea glabra, a mass of delicate mauve-purple and green, 5 ft. high, and nearly as much through—a really splendid specimen. Associated with these were likewise Erica tricolor impressa, and E. Eassoniana, white tubular varieties, both well grown and well flowered. Mr. Donald, gardener to J. G. Barclay, Esq., Leyton, had also an attractive group, his best specimens being Dipladenia amabilis, with bright rosy, salver-shaped flowers; Bougainvillea glabra, Ixora Fraseri, Chorozema Chandleri, the Jasmine-like Rhynchospermum, and a good plant of Balfour's Clerodendron. In the nurserymen's class, Mr. B. S. Williams and Messrs. Jackson and Sons both had well-grown collections; Messrs. Jackson contributed Allamanda grandiflora, with pure yellow, salver-shaped flowers; a good Pimelea mirabilis; a well-grown specimen of the pearly white and deliciously fragrant Stephanotis floribunda, and the scarlet-spotted Anthurium; Mr. Williams' best plant was Ixora Prince of Wales, a garden hybrid, with nearly yellow flowers, bright and effective, especially when contrasted with the blue Statice profusa, or other purple-flowered plants: the same exhibitor had also a splendid plant of Stephanotis floribunda, and Aerides odoratum, bearing nearly thirty flower-spikes. Of Ferns and other fine-foliaged plants there were several good collections.

Pelargoniums.—These were well represented, the best nine large-flowered or show varieties being those sent by Mr. J. Ward; the varieties were Conflagration (scarlet with black spots), Maid of Honour (rosy-salmon with maroon spots), Example (rosy-carmine with black spots), Ruth (carmine with dark spots and white eye), Royal Albert (salmon with maroon spots), Caractacus (purple with maroon spots), Admiration (rosy lilac with dark spots), Pompey (vermilion, upper petals maroon), and Emperor (rosy-flesh with maroon blotch). The above were shield-trained plants, each of which measured from 4 ft. to 6 ft. in diameter, and well deserved the premier prize which was awarded to them. The best six fancy varieties came from Mr. G. King, gardener to R. Tew, Esq., Esher; these consisted of well-grown shield-shaped or sub-globose plants, measuring from 2 ft. to 4 ft. in diameter, and perfect masses of bloom. The varieties were Princess of Teck (white with rosy spots), Formosum (rose and white), Tormentor (maroon and rose), Mrs. Alfred Wigan (deep rose with white eye), Roi des Fantaisies (white with rosy upper petals), and Madame Sainton Dolby, similar to the last but much smaller. The same exhibitor was also first for six show Pelargoniums, the varieties being Hermit (white with vermilion blotch), Filmorana (carmine with black blotch), Desdemona (white with red blotch), Exhibitor (carmine with maroon blotch), Beauty of Kingston (white with dark purple blotch), and Rival (soft salmon, inclining to vermilion, blotched with red). Scarlet and Zonal varieties were well represented, the best being those sent by Mr. King. His varieties were Delightful (soft pale salmon), Clipper (vivid scarlet), Gloire de Corbey (salmon-scarlet), Leonidas (vivid scarlet), Mrs. W. Paul (delicate rose), and La Grande (crimson-scarlet nosegay). These were shield-shaped plants, measuring from 5 ft. to 6 ft. in diameter.

Miscellaneous Plants.—These were very tastefully arranged in groups in the centre of the large tent, a position in which they made an effective display. Messrs. Veitch & Sons contributed a choice group, in which we noted a yellowish-coloured variety of Oncidium crispum named flavum, with flowers similar to those of O. Marshallianum in shape and size, but of a soft greenish-yellow colour, and, in addition, excellent specimens of Phyllanthus roseus pictus, Artocarpus laciniatus metallicus, Adiantum princeps (one of the freshest-looking and most effective of all Maiden-hair Ferns), and several beautiful new hybrid greenhouse Rhododendrons and Begonias of the tuberous-rooted section. In this group we also noted the new Sarracenia named Stevensi, a kind with greenish pitchers similar to those of S. flava; the yellow-blossomed Masdevallia Davisi, and an exceptionally fine plant of M. Veitchi, bearing four splendid flowers. In the same group was also a fresh-leaved example of Hæmanthus cinnabarinus, bearing a dense, globose head of vivid orange-scarlet flowers, and the more sombre and graceful beauty of choice Ferns, Palms, Crotons, and Dracænas, was further enlivened by several stands of pink, white, and creamy Peonies, Iris, and Stocks, and a strong plant of the scandent yellow-flowered glaucous-leaved Tropæolum polyphyllum. Mr. W. Bull furnished a choice group of new and rare fine-foliaged plants, several of which obtained first-class certificates. Messrs. E. G. Henderson and Sons had a fine bank of hybrid herbaceous Calceolarias, margined with lines of Zonal Tricolor Pelargonium Peter Grieve, and the creamy variegated Dactylis glomerata latifolia aurea, one of the most graceful of all variegated Grasses. Behind these was a choice collection of Beaucarneas, Palms, Arads, and Dracænas, and examples of the new and extremely graceful Prenanthes elegantissima. Mr. B. S. Williams showed a large and choice group of new and rare plants in excellent condition. In addition to Orchids, Amaryllids, Crotons, Dracænas, and other flowering foliage plants, we remarked Begonia metallica with glossy bronze-coloured foliage; Blandfordia grandiflora, with pendent orange golden-rimmed flowers; and several choice Sarracenias and Begonias. Mr. R. Parker contributed one of the most attractive groups of hardy plants we have yet seen exhibited; it consisted of lemon, yellow, sulphur, crimson, and white Peonies, blue and white Bellflowers, white and rosy Pyrethrums, and some well-selected blooms of Bearded and English Irises, a pale blue-flowered English Iris, having a yellowish-white lip, being especially beautiful; with these were well-arranged Maiden-hair and other Ferns, slender-leaved Dracænas, various kinds of Funkia and Hart's-tongue, and other British Ferns. Messrs. Paul, of Cheshunt, sent several large basketfuls of cut Roses; Mr. Charles Turner had beautiful blooms of Miss Hassard, a rosy flesh-coloured kind, and also examples of the Rev. J. B. Camm. Mr. Chard also sent several stands of Roses; and Mr. Roberts, of Peterborough House, Fulham, and Mr. Wheeler had groups of cut flowers of hardy plants; blooms of Catherine Bell, a new climbing Rose, of which we gave a coloured plate some time ago, came from Messrs. Bell & Son, of Norwich. It is a bright rosy variety, with silvery-lilac backs to the petals, and is said to be one of the most beautiful of all pillar and trellis Roses.

Fruit.—Black Grapes were fairly well shown, the best being some clusters of Black Hamburgh from Mr. W. Nash, gardener to the Duke of Beaufort at Badminton, and Mr. Okehurst, gardener to G. Copestake, Esq., of the Grove, Highgate. Heavier Grapes than these were shown, but not so well finished. Mr. Douglas sent three fine clusters of Royal Ascot, a large-berried black Grape, likely to become a favourite; Mr. Grimmet had three large-berried bunches of Madresfield Court in good condition. 12-lb. baskets of Black Hamburghs came from eight exhibitors, but those that were best finished came from Mr. Okehurst; Mr. Kay also showed a good basket. Muscat of Alexandria, small in berry, but otherwise in excellent condition, came from Mr. Robins; Mr. Grimmet was second with clean, large-berried bunches; and Mr. Douglas had good fruit of the Cannon Hall variety. Good clusters of Foster's Seedling were shown, but they were green; good 12-lb. baskets of Muscats came from Mr. Grimmet and Mr. Kay; and Mr. Atkins sent a good basket of Buckland's Sweetwater. Scarcely ripe Melons were poorly represented, Mr. Wildsmith, of Heckfield, being first with Hero of Bath (scarlet-fleshed), and Heckfield (green-fleshed; Mr. Ward also had a prize for Longford Castle (green-fleshed), and Longford Castle (scarlet-fleshed); Mr. Sage, of Ashridge, sent a noble fruit of Golden Perfection. Mr. Miles' Cherries, both Elton's and Black Circassian, were as near perfection as possible. Mr. Douglas had the best Strawberries, the varieties being Duc de Magenta, and Seedling No. 1, of his own raising. The same exhibitor had excellent dishes of brown TurkeyFigs. Mr. Woodbridge

Sion House, showed a dish of well-grown Vanilla pods, large and fragrant. From Mr. Miles came three boxes of Tomatoes, viz., Carter's Green Gage, a globular fruit resembling yellow Plums, Stamfordian, and Large Red, all in excellent condition. Mr. Douglas also had three fine dishes, among which the Green Gage variety was very fine. Of Peaches, which were poorly represented, there were five dishes, and of Nectarines six dishes, the latter good fruit, consisting of Violet Hative, Elruge Brugenon, and Scarlet. Of Queen Pines, some excellent fruits were shown by Mr. Ward, gardener to G. N. Nutter, Esq., Bishop's Stortford.

ROYAL HORTICULTURAL SOCIETY.

June 21.

This meeting taking place, as it did, on the day on which the Royal Botanic Society held its great show, was but a small one. The Rev. M. J. Berkeley gave an account of some Morello Cherry trees in his garden which produce flowers of three kinds freely. In one set there was not the slightest trace of any stigma; an intermediate set had a short and abortive pistil, while a third set consisted of a few normal flowers, which produced, however, but a small proportion of fruit.

First-class Certificates.—These were awarded to the following new and rare plants:—

Mormodes luxatum eburneum (Sir T. Lawrence).—A strong-growing Orchid, having fusiform pseudo-bulbs 5 in. or 6 in. in length and glaucescent, lance-shaped leaves; the flowers, which are large, are borne fourteen to sixteen together on a stout, arching spike, 15 in. or 16 in. long, and are of a milk-white colour and slightly fragrant; the column, which is stout, is curiously contorted (as in Goodyera), an arrangement evidently intended to facilitate cross-fertilisation by means of insect agency. The plant, as exhibited, is very beautiful, and well worthy of careful culture.

Azalea indica imbricata (Veitch).—A double-flowered variety of a greenish-white colour, flaked with carmine, the flowers being freely produced even on very small plants. At first sight the blossoms remind one of those of a double-flowered Petunia. It is the most perfectly double of all the so-called Double Azaleas, and is likely to prove a useful decorative plant.

Miscellaneous Plants.—Sir Trevor Lawrence showed a small group of Orchids in excellent health, and among them we noted a very dark purple-spotted variety of Odontoglossum Roezli, named atro-purpureum, bearing nine flowers, and two species of Mormodes, namely M. pardinum, with golden-yellow flowers on a secund spike, and M. luxatum var. eburneum, which has creamy-white blossoms. To a remarkably well-grown plant of the hybrid Calanthe Dominyi, bearing eight fine spikes of purple flowers, a cultural commendation was awarded. The Rev. J. T. Boscawen, Lamorran, Probus, Cornwall, sent a very large and beautiful variety of Iris Xiphioides, bearing blue flowers. Several effective blue and purple-flowered bedding Violas were furnished by Mr. R. Nash, of The Household, near Gerard's Cross, Bucks. Mr. C. Lidgard, Albion Road, Hammersmith, sent a basketful of blue and lilac bedding Lobelias, of the L. pumila section, and a scarlet Zonal Pelargonium of good habit, and some large and beautiful seedling Foxgloves came from Mr. Warren, gardener to the Earl of Portsmouth, Hurstbourne Park, Hants; Messrs. Cripps & Sons, of Tunbridge Wells, showed a dark purple Clematis named Othello, said to be a seedling from C. viticelli venosa, to which it is superior in both colour and form. With it came a seedling Begonia (C. Pearcei crossed with C. Sedeni) which has the foliage of the first-named kind coupled with soft orange-yellow flowers. Mr. Miles, of West Brighton Nurseries, Cliftonville, sent a new Mignonette, which bears very long spikes of white fragrant flowers. Col. Trevor Clarke contributed a hybrid Pink raised from a purple flake Carnation crossed by a purple Indian Pink. It is of robust and free-flowering habit, the colour of the semi-double flowers being brilliant carmine. A well-grown plant of Dianthus multiflorus came from the Society's garden at Chiswick, together with a variety named Lord Lyons, which is one of the best of the decorative kinds. Mr. Osman, gardener to the South Metropolitan District Schools, sent a small and interesting collection of Zonal Pelargoniums; and from Mr. J. B. Goubert, nurseryman, of Kilburn, came a rosy salmon-flowered Carnation, of tall habit, named Madame Goubert, which promises to be useful for cutting. Mr. Dean sent cut flowers of Petunias and Nasturtiums, and a very showy stand of purple, white, and rosy Canterbury Bells (Campanula Medium); from Messrs. Waite, Burnell, Huggins, and Co., came a dwarf variety of Saponaria calabrica. A plant of the pink-flowered Zonal Pelargonium Cleopatra was shown from the Society's gardens at Chiswick; it has scarlet flowers, and the normal ones are pink; this kind was raised from a variety called Cerise, which was itself obtained from a dull scarlet variety, and in the plant exhibited, the production of the dull scarlet flowers shows a case of reversion of two generations, and was very interesting as throwing some additional light on the phenomenon known as bud variation.

City of London Flower Show.—The report of the committee for the past year has just been issued, from which it appears that the annual exhibition of plants and flowers, held in the gardens of Finsbury Circus in July last, proved a great success, exceeding all its predecessors both in the number of plants exhibited, and in their mode of culture—many of them being, in the opinion of the judges, remarkable examples of successful cultivation. Several special prizes were given by gentlemen interested in the matter. The Rev. F. Bishop is the honorary secretary, and all communications should be addressed to him at the schools, Bishopsgate. The residents of Finsbury Circus have granted the use of their gardens for the flower show to be held next July, and it is expected that the Duchess of Teck will distribute the prizes.

NOTES AND QUESTIONS—VARIOUS.

Transplanting Lilium giganteum.—This Lily will bear moving even after it has made considerable growth. We moved a large plant of it here after it had four flower-spikes over 2 ft. high without its sustaining the least damage. A good watering twice after planting was all the attention which was given to it, and now after a month in its new quarters it is thoroughly established.—H. M.

Geranium Robertianum album.—This is a pure white-flowered form of the Herb Robert, and one of the prettiest of all wild Geraniums. Some vigorous tufts of it have established themselves on the moist walls of a large tank in Messrs. Rollisson's Nursery, at Tooting, where they are now flowering profusely, each individual flower standing out clear and bright as a silver star. Planted in moist and shady parts of the rock or root garden this plant would be perfectly at home, and it would also prove a good addition to the wild garden. —B.

Lilium Thompsonianum (Fritillaria macrophylla) has been in beautiful bloom in the open border here for a week. It has stood the winter well with a slight covering of Cocoa refuse. It reminds one much more of an Anthericum than either a Lilium or a Fritillaria in its general growth; but, of course, its bulbous roots point to the two latter genera. Its pale rose-coloured flowers are excessively pretty, and it has the merit of being less fugacious than many of its congeners. I have grown this species for five or six years, but never succeeded in flowering it before.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

Carter's White Advancer French Bean.—I have forced this in quantity this year and have found it to be very productive, the pods being long and very tender. This variety and Osborn's Early Forcing are two of the best that can be grown for winter forcing. Where room can be spared, the Canadian Wonder is by far the largest-podded and most productive of all the race, and invaluable for showing. It is likewise an excellent variety for growing in the open air, being nearly as productive as Scarlet Runners.—William Tillery, *Welbeck.*

Golden Elder.—This is by far the most showy and effective yellow shrub yet introduced; its foliage is golden-yellow, a colour which it retains from spring until autumn. It is a very valuable shrub for planting amongst Hollies, Yews, or dark-foliaged Firs for effective contrast in pleasure-grounds, wood-walks, and drives. It may be propagated as easily as a Willow by means of cuttings, and it will thrive in any soil or situation; indeed it is as vigorous and hardy as the common variety.—A Forester.

An Edible Yucca (Y. baccata).—Messrs. Hoopes & Thomas, of Philadelphia, cultivate this plant. It is a rare native species found in Utah, Colorado, recently introduced into cultivation. The leaves are very thick, long, narrow, and concave; the flowers are showy, bell-shaped, white, and exceedingly fragrant, and are said to be succeeded by agreeable, sweet, edible fruit.

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